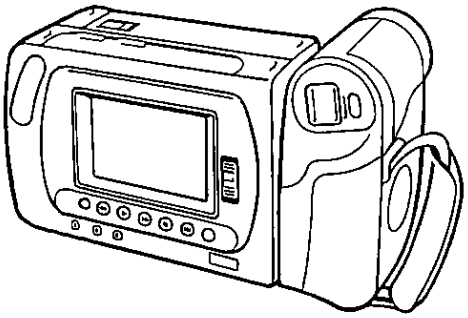
SHARP SERVICE MANUAL

S34P5VL-E31S/



LIQUID CRYSTAL CAMCORDER 8 PAL

MODELS VL-E31S/H/X VL-E17E

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified be used.

For the mechanical adjustments, refer to the service manual for the **MECHANISM SECTION DESCRIPTION**

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SHARP CORPORATION

1. FEATURES

1. VARIABLE-ANGLE SHOOTING AND INSTANT REPLAY WITH 3" COLOUR LCD MONITOR AND BUILT-IN SPEAKER
2. 8× 3-SPEED POWER ZOOM
3. PROGRAMME AE (SCENE MENU) FOR 4 SHOOTING SITUATIONS—SPORT, SNOW/SAND, TWILIGHT, AND PARTY
4. Hi-Fi MONAURAL
5. CAT'S EYE—MINIMUM ILLUMINATION 4 LUX*
6. NEURO AUTO EXPOSURE
7. DIGITAL AUTO WHITE BALANCE
8. DIGITAL FULL RANGE AUTO FOCUS
9. ON-SCREEN MENU DISPLAY
10. 16:9 WIDE SCREEN COMPATIBILITY
11. INFRARED REMOTE CONTROL
12. EDIT SEARCH
13. QUICK RETURN
14. FLYING ERASE HEAD FOR EDITING
15. AUTO HEAD CLEANER
16. WARNING INDICATORS—LOW BATTERY, LOW LIGHT, TAPE END, ETC.
17. 3-WAY POWER SOURCE: AC, RECHARGEABLE BATTERY, AND CAR BATTERY (with optional VR-P100CH)

2. SPECIFICATIONS

Signal System:	PAL standard
Recording System:	8 mm format, 2 rotary heads, helical scanning system
Cassette:	8 mm video tape, MP type
Recording/Playback Time:	90 minutes (P5-90)
Tape Speed:	20.051 mm/second
Pickup Device:	¼" CCD image sensor (with approx. 320,000 pixels including optical black)
Lens:	8× power zoom lens (F1.8, f = 4.5–36 mm), and full-range auto focus
Lens Filter Diameter:	37 mm
Monitor:	3" full-colour LCD screen (TFT active matrix)
Speaker Output:	200 mW
Microphone:	Electret monaural microphone
External Microphone Input:	−66 dBs, input impedance 6.8 kohms
Colour Temperature Compensation:	Auto white balance
Minimum Illumination:	4 lux* (with gain-up)
Video Output Level:	1.0Vp-p 75-ohm unbalanced
Audio Output Level:	−8 dBs, impedance less than 2.2 kohms
Power Requirement:	DC 6.0 V
Power Consumption:	75 W (during camera recording in Full Auto mode with zoom motor off, backlight in normal mode)
Operating Temperature:	0°C to +40°C
Operating Humidity:	35% to 80%
Storage Temperature:	−20°C to +60°C
Dimensions (approx.):	200 × 123.5 × 75 mm (W/H/D)
Weight (approx.):	850 g (without battery pack, lithium battery and video cassette)

AC Adaptor/Battery Charger Specifications

Power Requirement:	AC 110–240 V, 50/60 Hz
DC Output:	6.0 V
Power Consumption:	23 W
Dimensions (approx.):	70 × 44.3 × 165 mm (W/H/D)
Weight (approx.):	350 g

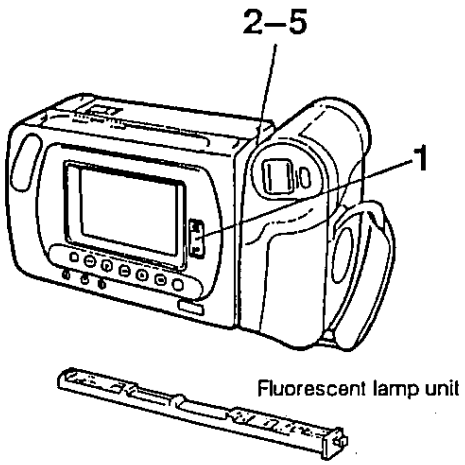
SUPPLIED ACCESSORIES

Standard battery pack (BT-77)	Cleaning cloth	Audio/video cable
AC power adaptor/battery charger	DC output cable	
Infrared remote control	Lithium battery ×2	

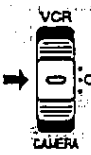
Design and specifications are subject to change without notice.

*Minimum illumination: Since there is no widely accepted testing procedure for determining minimum illumination capability, lux ratings are comparable only between models from the same manufacturer.

3. FLUORESCENT LAMP BACKLIGHT



The fluorescent lamp backlight used in this VIEWCAM will eventually need replacing.
If you continue to use the VIEWCAM when the fluorescent lamp has almost reached the end of its service life, the "REPLACE THE LAMP." indicator will appear in the centre of the monitor screen, and the monitor will go off approximately one minute later. When this occurs, purchase a replacement lamp (CLMPV0007TA01) from your dealer or a SHARP Full Line Parts Distributor, and replace the old lamp.

1


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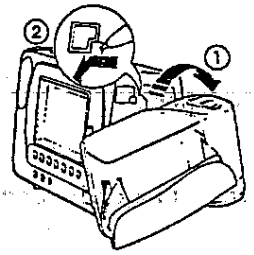

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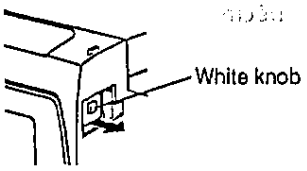

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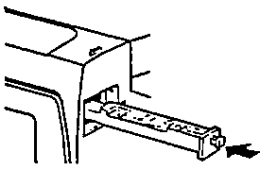

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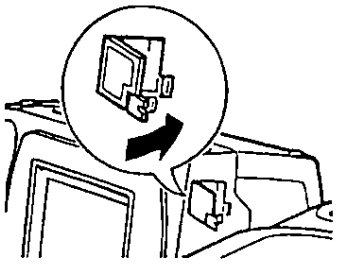


REPLACING THE FLUORESCENT LAMP BACKLIGHT

1 Set the Operate switch to OFF to turn off the VIEWCAM, and wait about 15 minutes for the lamp unit to cool down.

2 Rotate the lens part of the VIEWCAM halfway forward in the direction of the arrow (①), and then remove the fluorescent lamp compartment cover (②): using a pointed object such as the point of a pen, push the cover release "■" toward the monitor side, and then pull outward.

3 Carefully hold the end (white knob) of the fluorescent lamp unit with tweezers, and pull the lamp unit out.

4 Insert the replacement fluorescent lamp unit into the compartment. See note below.

5 Replace the fluorescent lamp compartment cover.

Notes:
- Be sure to insert the replacement fluorescent lamp straight in, in the direction of the arrow, into the compartment. Do not press diagonally as it may cause contact failure.
- The fluorescent light may flicker when first turned on. Should this occur, turn off the VIEWCAM, and then turn it on again.

Cautions:
- The fluorescent lamp is hot during and immediately after use of the VIEWCAM. Wait at least 15 minutes after turning the power off before attempting to change the lamp, to allow time for it to cool down.
- Attempting to change the fluorescent lamp while it is still hot may result in burns or other injuries.

4. Handling of Ni-Cd battery

Please be noted that two types of battery are used in our CAMCORDER, and each of them should be handled in a different manner respectively: One is Ni-Cd battery employed in this model (and the other is conventional Sealed Lead-Acid battery).

1. Storage
(1) The battery should be stored in normal room temperature and humidity. It will have a shorter life if it is placed and stored in high or low temperature.
(2) Ni-Cd battery should be stored in discharged condition.
(On the contrary, Sealed Lead-Acid battery should be stored in full-charged condition.)

2. Charging
(1) Battery charger must be a genuine one.
If a wrong charger is used, the electrodes (+ and −) will be damaged.
(2) This Ni-Cd battery should be charged just before use.
For a longer life, keep it in discharged condition and charge it just before use.
(As for Sealed Lead-Acid battery, charge should be done periodically.)
(3) Over charge should be avoided.
Over charging will affect the life of the battery. Attempting to charge a full-charged battery agein in a short period (say within half a day) may result in an overcharge, causing a shorter life of the battery.
(4) Charging in a hot place should be avoided.
As it will affect the life of the battery, charging should be done in a cool place.
If it is charged in a hot place, the battery may have abnormally high temperature, causing a shorter life of it.

Protect your environment!
Batteries must not be thrown into household waste; they need a special treatment.

Der Umwelt zuliebe!
Batterien dürfen nicht mit den Siedlungsabfällen entsorgt werden, sonc ern verlangen Sonderbehandlung.

Pensez à votre environement!
Ne pas jeter les piles avec les ordures ménagères, exige un traitement spécial.

5. DISASSEMLING OF SET

Cares before disassembling
1. Take out the AC adapter, battery, and tape from the machine.
2. When assembling the machine after repair, be sure to arrange the wiring and fix the screws, restoring the initial state.
3. When repairing, pay due attention to static electricity on ICs.

5-1 Disassembling of camera section (single cabinet unit)

5-1-1 Types of screw (camera section, types)

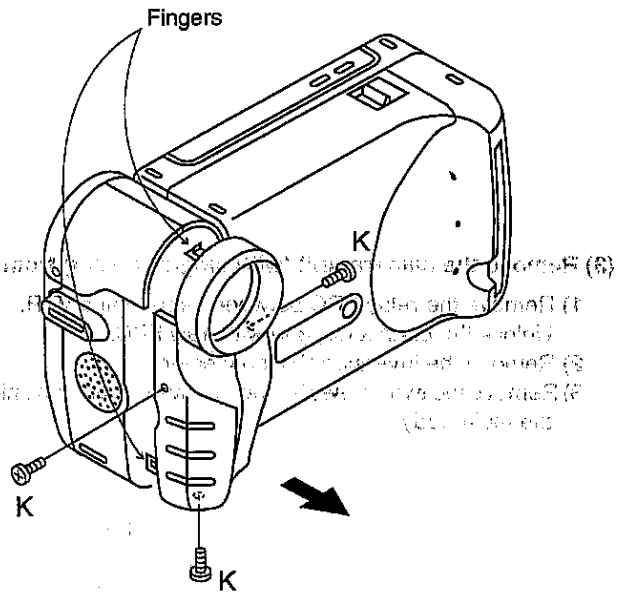
Fig. No.	Name	Shape	Color	Quantity
K	Screw	M2	Black	10

5-1-2. Procedure

(1) Remove the front cabinet of camera.

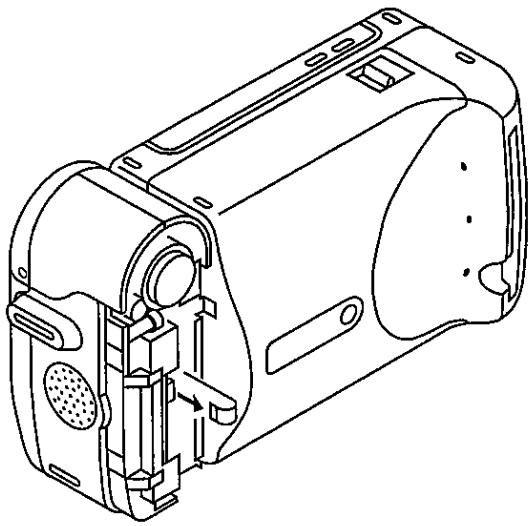
1) Remove the 3 screws K. Turn the camera section to get the angle easy to insert the screwdriver, and remove the screw.
2) Withdraw the front cabinet of camera. At this time, depress the two fingers to release them.

*For easier removal, remove the 5 screws of rear cabinet.

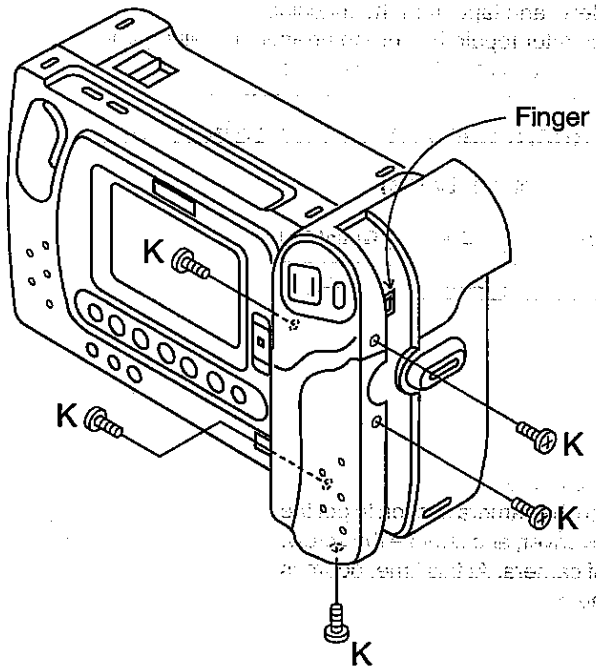


(2) Remove the rear cabinet of camera.

1) Withdraw the Zoom-Sw flex cable from the main body connector.
2) Remove the 5 screws K.

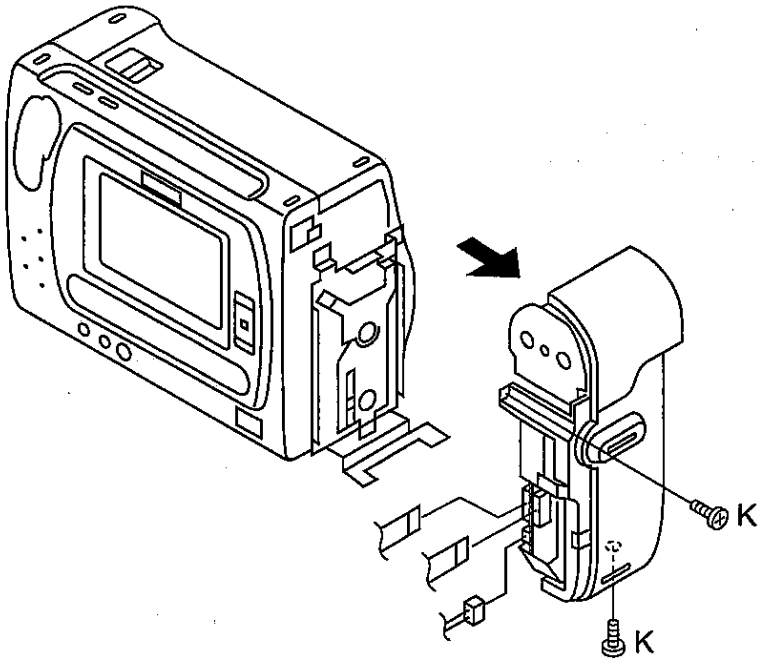


(3) Withdraw backward the rear cabinet of camera. At this time depress the finger to release it.



(3) Remove the camera unit (with single cabinet) from the main body.

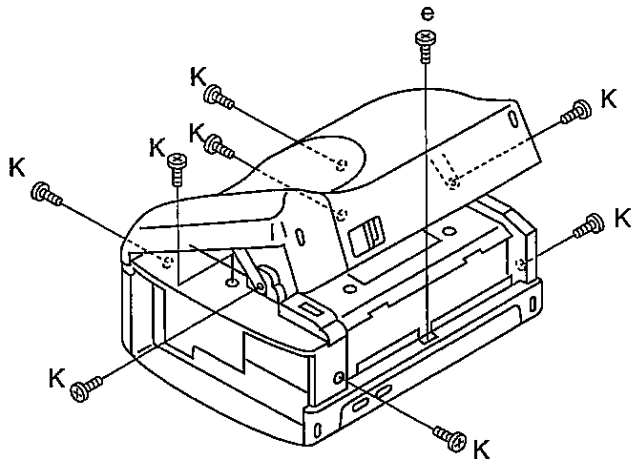
1) Remove the relay FPC between camera and VTR.
   Unlock the connector, and withdraw FPC.
2) Remove the inversion SW connector.
3) Remove the two screws K, and remove the camera unit from the main body.



5-2. Disassembling of VTR

5-2-1. Types of screw

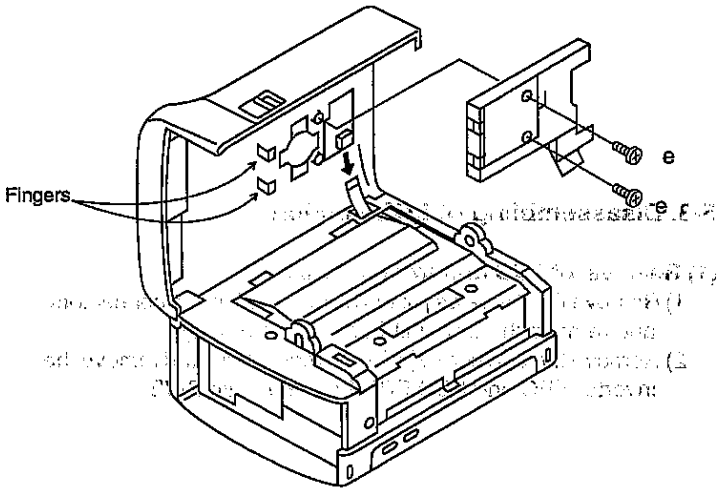
Fig. No.	Name	Shape	Color	Quantity
K	Screw	M2	Black	12
e	Tap screw		Black	3



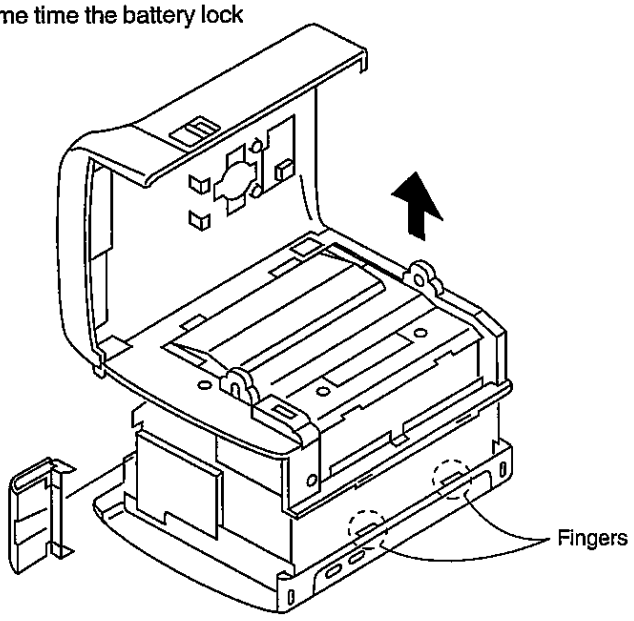
5-2-2. Procedure

(1) Removal of VTR cover ass'y

1) Release the cover lock knob, open the cover, and remove the 8 screws K and one screw e.
   * If the cassette controller of mechanism has stopped midway, apply DC 6V to the loading motor terminal provided at the right lower side of mechanism, and lower the cassette controller.
2) Remove the 2 screws e at the inner side of VTR cover, remove the cover, and remove FPC from the main body.

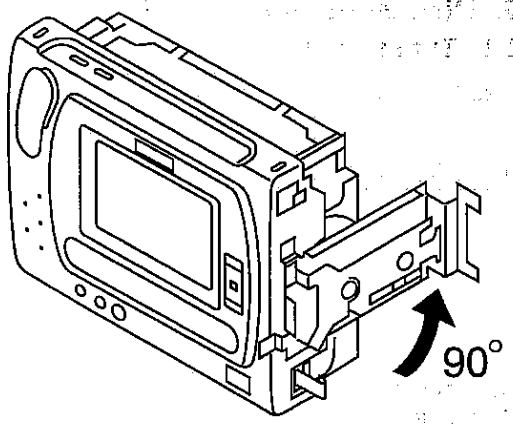


3) Withdraw the VTR cover ass'y from the main body. At this time, lift the LCD cabinet to release the two LCD cabinet fingers at the upper side. At the same time the battery lock case is also removed.

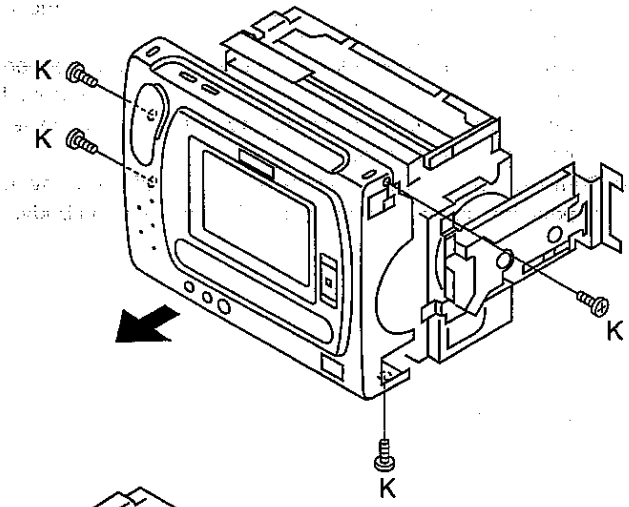


(2) Removal of LCD cabinet ass'y

1) Turn the camera turn angle by 90° and remove FFC from the connector.



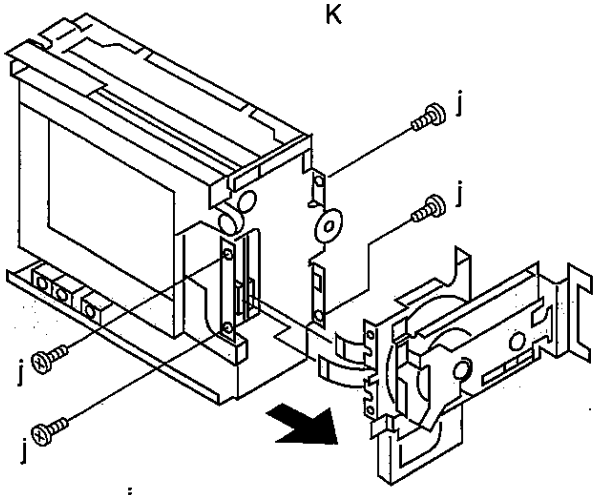
2) Remove the 4 screw K, and withdraw the LCD cabinet ass'y from the main body.



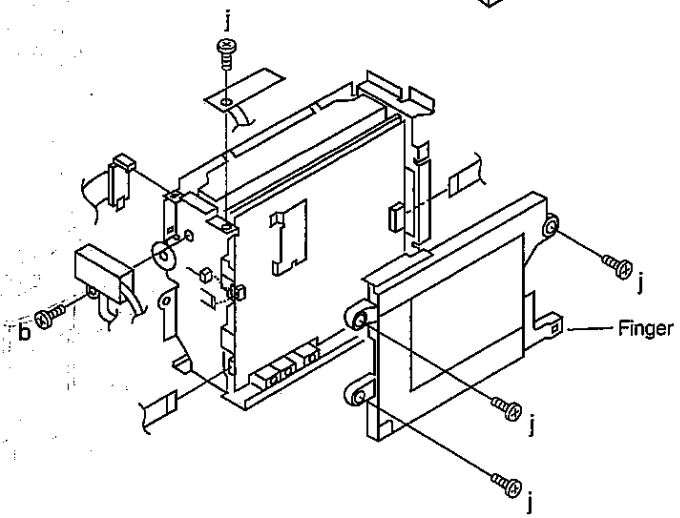
5-3. Disassembling of LCD section

(1) Removal of LCD unit from chassis

1) Remove the 4 screws j of turn angle and the two connectors, and remove the turn unit from the main body.
2) Remove the one screw j of menu sheet key, and remove the inverter FPC and LCD FPC from the main PWB.

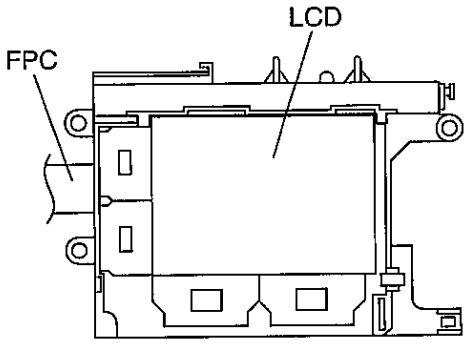


3) Remove the one screw b and the 3 screws j, and remove the LCD unit (with inverter) from the main body. At this time be careful so as not to break the finger engaged with the chassis.

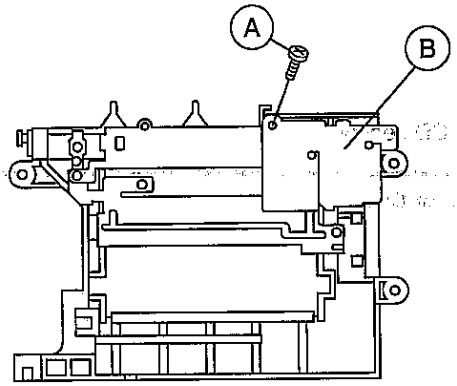


5-4. Disassembling of LCD Unit

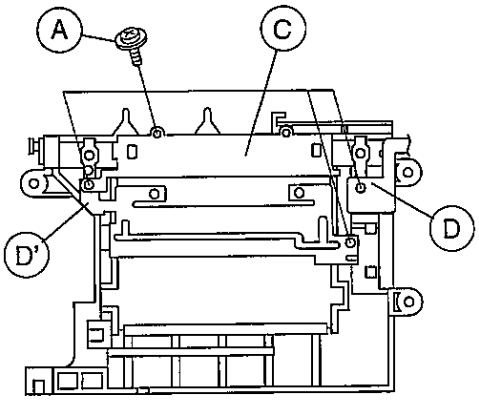
1. Remove LCD FPC from the LCD connector.



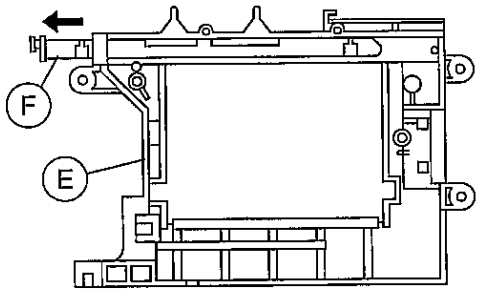
2. Remove the one screws Ⓐ (LX-HZ3025CEFF), and remove the lamp terminal insulating sheet Ⓑ.



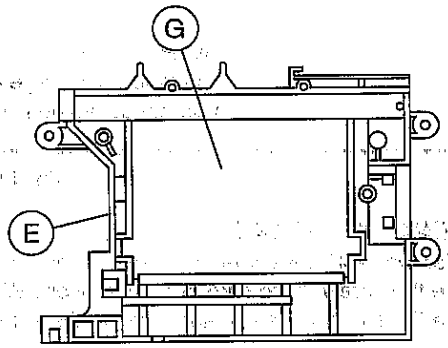
3. Unscrew the four fixing screws Ⓐ (LX-HZ3025CEFF)off, and remove the LCD holder guide Ⓒ, the lamp terminals Ⓓ, and the light guide plate holder Ⓓ'.



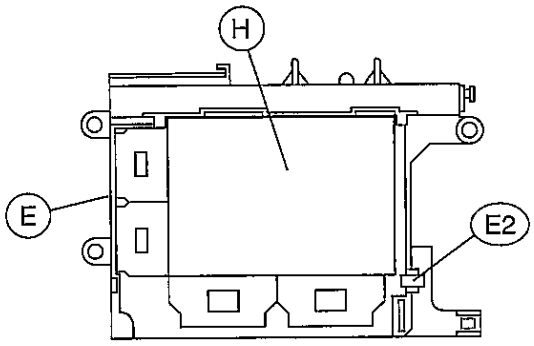
4. Remove the lamp holder Ⓕ from the LCD holder Ⓔ.



5. Remove the light guide unit Ⓖ from the LCD holder Ⓔ.



6. Bend the one hook Ⓔ-2 of LCD holder Ⓔ with due care so that it is not broken, and remove the LCD module Ⓗ.

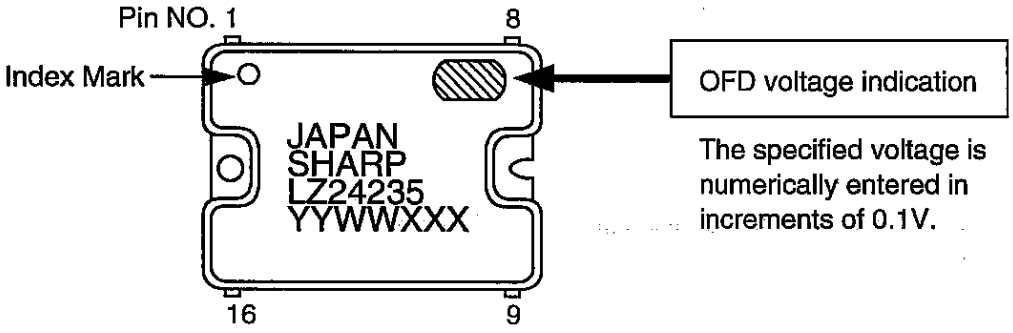


5-5. REPLACEMENT OF CCD SENSOR

5-5-1. BEFORE REPLACEMENT

1) The CCD image sensor is more sensitive to electrostatic breakage than C-MOS LSI. Therefore sufficient means to prevent electrostatic damage must be taken when it is replaced.
- Ground the soldering iron.
- Ground also the human body, using the wrist strap(through an 1 Mohm resistor).
- Until the CCDsensor is mounted on the PWB, fit it to the conductive sponge, and short-circuit the foot lead.

2) Take utmost care so that the surface glass of CCD sensor and optical filter are not contaminated and damaged. If any contamination is found, for example fingerprint, wipe it off with silicon paper or clean chamois skin.
3) When replacing the CCD sensor, use the antistaic grounded soldring iron, and perform quickly soldering.
4) Before mounting the CCD sensor, read the V-OFD voltage shown on the rear side of CCD sensor, and record it. When adjisting V-OFD voltage, refer to item 2 of "Adjustment Procedure".



Note:
Indication of voltage (ofd) set value.
Voltage set value is indicated on the back of the CCD sensor.

V-OFD voltage marked on the back of CCD

5-5-2. REMOVAL OF CCD

1) Unsolder the CCD sensor leads from the sensor PWB.
2) Remove the screw (1) to take out the sensor PWB.
3) Remove the two screws (2), and remove the sensor holder and CCD sensor.

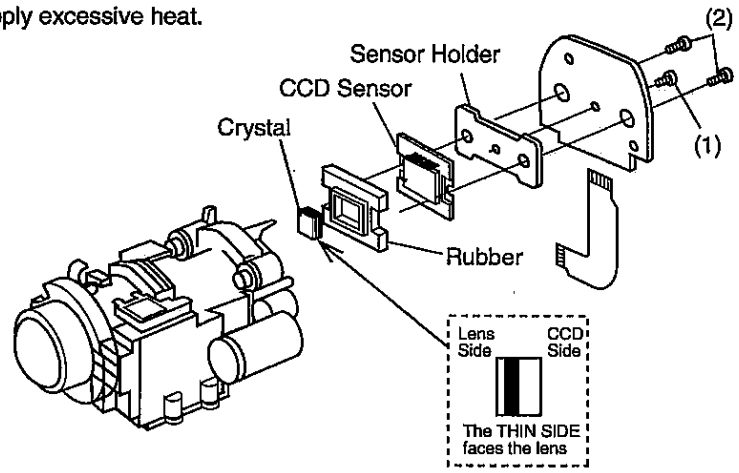
5-5-3. MOUNTING OF CCD

1) Place the lens unit upright (since the CCD sensor mount ID faces upward, care must be taken so as not to damage the front lens of unit), put the crystal filter first and then the dust protection rubber into the CCD holder of lens unit. Set the crystal unit with its thin side toward the lens unit.
2) Place the CCD sensor so that the its No. 1 pin is at the right lower (Positioning hole to be at right), and put the CCD sensor into the CCD holder. For smooth and tight fitting, press the right lower part of back of CCD sensor, and then press the left upper part.

Note: Pay attention to the direction of CCD sensor.

3) Place the sensor holder so that its two round markings be visible, and fix the sensor holder with the two screws (2).
4) Mount the sensor PWB so that the CCD sensor leads go thorough the PWB holes. Fix the PWB with the screw (1).
5) Solder the CCD sensor lead to the sensor PWB.

Note: Take care not to apply excessive heat.



5-6. INITIAL SETTING OF EÉP ROM IC

5-6-1. IC704 (EÉP ROM)

When the IC704 has been replaced, make the following settings and adjustments.

- System code setting

* Set the test mode to the VCR adjustment mode. Take the following steps.

1) Destination code — Write the destination data (model numbers) to the addresses 02 (Main) and 0A (Sub).

Destination	02 (Main)	0A (Sub)
S	02	FD
H	02	FD
X	04	FB
E	03	FC

For calling the addresses and writing the data, refer to the VCR adjustment mode setting on page 6-4.

2) Specification switching code

Address	Data
03 (Main)	08
0B (Sub)	F7

3) Menu selection code

Address	Data
04 (Main)	10
0C (Sub)	EF

4) Software selection code

Address	Data
05 (Main)	00
0D (Sub)	FF

* After setting the above codes, clear the VCR adjustment mode and turn off the power.

Adjustments to follow

Make the system controller servo, VCR, and LCD adjustments according to their respective instructions (see pages 6-5 to 6-11).

5-6-2. IC502 (EEPROM)

When the IC502 has been replaced, make the camera adjustment according to its instructions. (see pages 7-5 to 7-8).

5-6-3. HEAD AMP ADJUSTMENT

For the head amplifier mechanism relay unit (RAMP-0003TAN1), E2P ROM (IC302) is provided.
In this ROM the following three data are written:

(1) PB SW-P adjustment
(2) Y record current adjustment
(3) C record current adjustment

The data writing (adjustment) is made on the assembly of mechanism and head amplifier mechanism relay unit.
In any case be sure to execute the adjustments (1), (2), and (3).

The adjustment method is described in Section "ADJUSTING THE VCR CIRCUIT".

5-7. ADJUSTING THE Y/C, AUDIO AND LCD CIRCUITS ON MODELS WITHOUT A/V IN MODE (A/V IN MODE SET-UP PRODUCE)

1) Feed necessary signal to the VIDEO IN/OUT terminals on the VCR ADJ JIG (QPWBF2450TAZZ).
(In this state, the ADJ mode sign appears on the LCD display with no images.)

2) Set up the adjustment address (example : EEmode adjustment address 14). Once this address has been set up, the A/V IN mode (test mode) is automatically brought and the images appear on the LCD display.

3) Now make the adjustments referring to the instruotions in the manual.

6. ADJUSTMENT OF VCR SECTION

6-1. Before starting the electric circuit adjustment

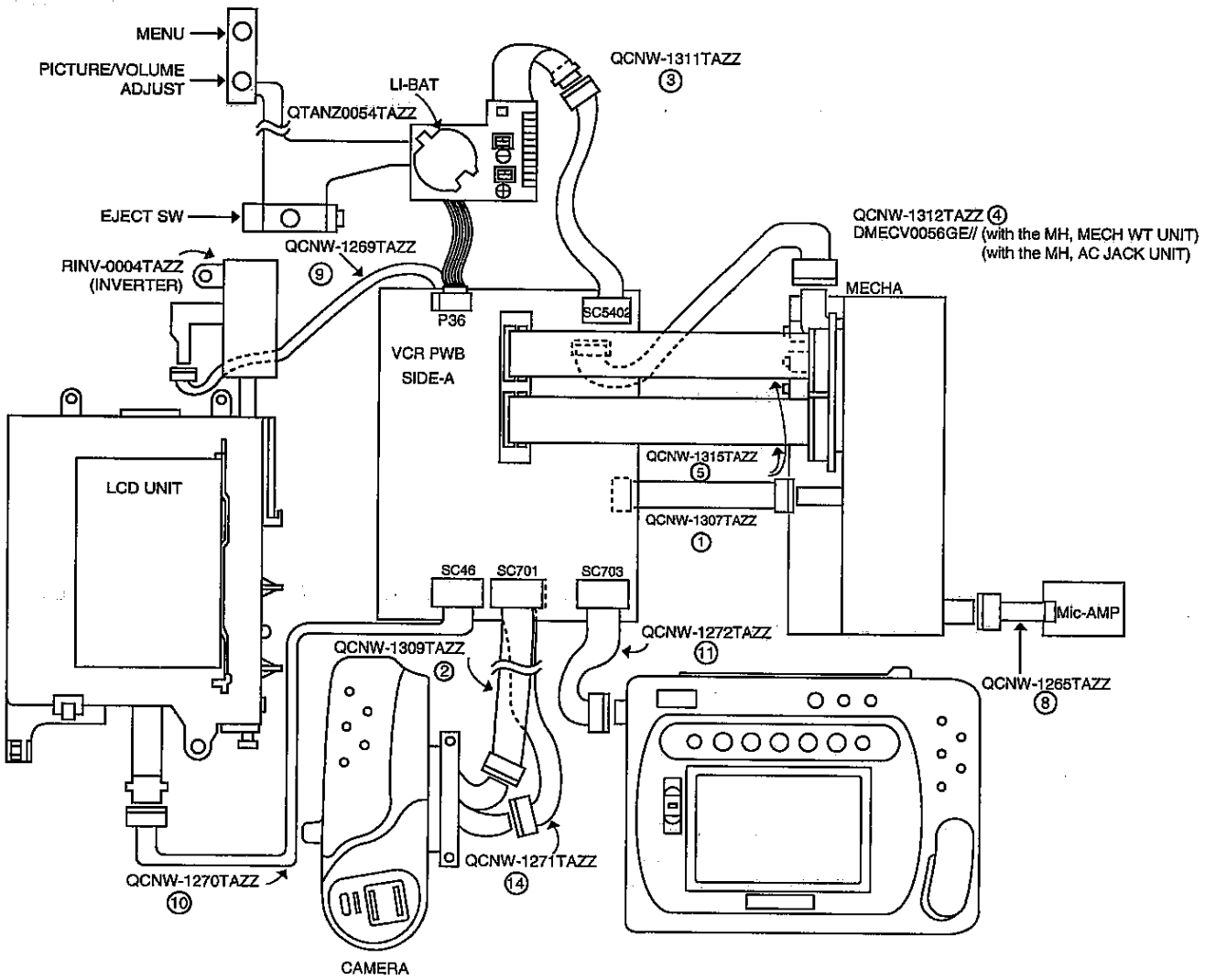
- Electric circuit adjustment becomes necessary, in most cases, when any of the wear mechanical parts or the video head has been replaced. Before starting the electric circuit adjustment, be sure to check that the mechanical parts work well (i.e., the mechanical parts have all been perfectly adjusted). In case a trouble or troubles are found in the electric circuitry, be sure to pinpoint the cause(s) by using the measuring instruments described below. After locating the trouble spot(s), then proceed to repair, replacement or adjustment. Do not change the positions of the controls when adequate measuring instruments are not available.
- In order to implement a higher-density, smaller machine, most of the electric circuit parts used on the PWBs are of small-sized, surface-mounted type. For replacing part(s) as after-sales service, work with a soldering iron as speedily as possible. The heat resistance of the surface-mounted components is poor, when compared with the larger-sized discrete parts used for television sets and stationary decks, owning to their small sizes. Therefore, exercise due care to avoid long-time exposure of the pins of these parts to the heat of the soldering iron which may possibly damage them. Such care should be exercised especially for chip-layer capacitor replacement. It is advisable to use a temperature-controlled ceramic soldering iron (temperature at the tip: 250°C, contacting time: less than 5 seconds).

< Adjusting the video/LCD section >

- Measuring instruments:

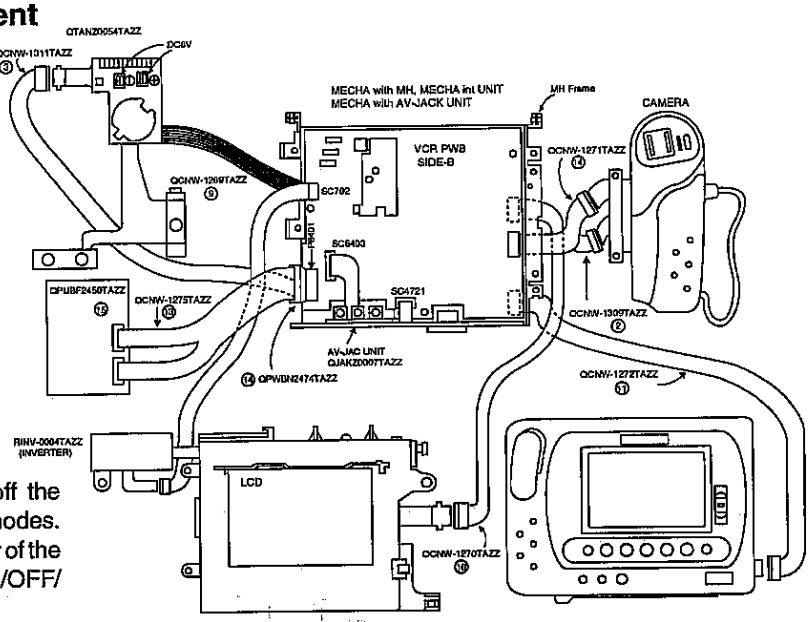
*Color monitor TV set	*Oscilloscope	*Vector scope
*Digital voltmeter	*Frequency counter	
*DC power supply	*Signal generator (NTSC pattern generator LCG-401/401YC: Leader-made)	
*Audio generator (CR oscillator)	*Video recording tape	
*Alignment tapes JIGWR5-5NSP (For Y/C, audio nd servo adjustments)		
*AC adapter	*DC cable (AC adapter accessory)	
*Stereo AV output cable (accessory)	*Video extension cables	

6-2. Connections for VCR Section Adjustment



6-3. Servicing the VCR section Adjustment

6-3-1Typical connections



- Adjustment mode setting tool (QPWBF2450TAZZ)
  The QPWBF2450TAZZ tool serves to turn on and off the power (VCR or CAMERA) as well as to set up the test modes. (Before connecting this tool, be sure to turn off the power of the LCD Viewcam. Then connect the tool and use its VCR/OFF/CAMERA selector switch.)

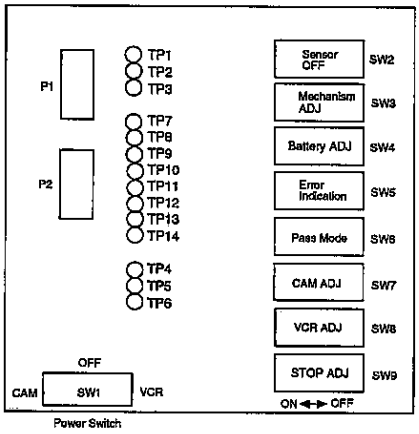
ADJUSTMENT AND SERVICING OF VCR SECTION

LIST OF VCR JIGS

NO.	JIG ITEM	PARTS CORD	PRICE CORD	CONTIGURATION	NOTE
1	Extension Wire Connected to →	QCNW-1307TAZZ		(10 Pin)	N
2	Extension Wire Connected to →	QCNW-1309TAZZ		(13 Pin)	N
3	Extension Wire Connected to →	QCNW-1311TAZZ		(15 Pin)	N
4	Extension Wire Connected to →	QCNW-1312TAZZ		(17 Pin)	N
5	Extension Wire Connected to →	QCNW-1315TAZZ		(70 Pin)	N
8	Extension Wire Connected to →	QCNW-1265TAZZ	AX	(7 Pin)	
9	Extension Wire Connected to →	QCNW-1269TAZZ	AY	(6 Pin)	
10	Extension Wire Connected to →	QCNW-1270TAZZ	AY	(18 Pin)	
11	Extension Wire Connected to →	QCNW-1272TAZZ	AY	(12 Pin)	
12	Extension Wire Connected to →	QCNW-1271TAZZ	AY	(14 Pin)	
13	Extension Wire Connected to →	QCNW-1275TAZZ	BL		
14	Extension Board	QPWBN-2474TAZZ			N
15	VCR Adjustment SW Board Connected to Ex tension Wire (QCNW-1275TAZZ)	QPWBF2450TAZZ	BF		
16	FPC Insert JIG	9EQPINSET01GE	BG		
17	Alignment Tape (Y/C Audio Alignment)	JIGWR5-5NSP (NTSC)	BU		
18	Alignment Tape (Tape Path Alignment)	JIGWR2-1NP (NTSC)	CS		
19	Alignment Tape	JIGWR5-5CSP (PAL)	BU		
20	Alignment Tape	JIGWR2-1CP (PAL)	CP		

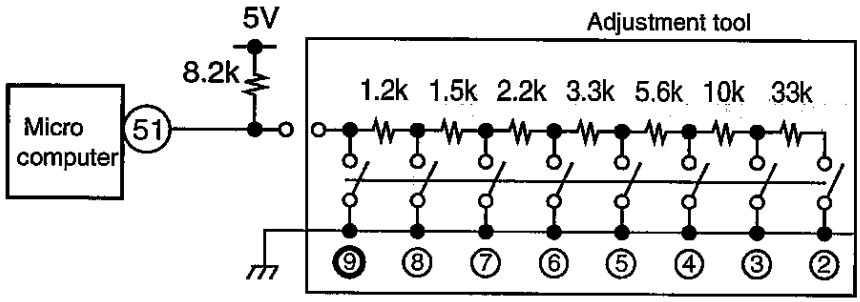
NOTES: 1. N Indicates the new jigs.

• Usage of adjustment mode setting jig(QPWBF2450TAZZ or QPWBN2408TAZZ)



• Types of test modes

Any of the eight test modes can be set up by changing the input voltage at pin (54) of IC701. During any test mode, the REC Start/Stop commands are not accepted.



Use the SW1 thru SW8 switches on the adjustment tool to select the following test modes.

SW No.	Title	Contents	Sensor on/off
2	Sensors off	All sensors but the cassette controller switch, dew sensor and battery sensor stay off.	
3	Mechanism adjustment mode	① Automatic SP/LP detection prohibited ② Different-mode detection prohibited ③ ATF sampling limited to center	All sensors on
4	Automatic battery sensor adjustment	Battery sensor's input voltage put in memory.	
5	Error display Battery adjustment error display	Past errors appear on the counter display of the viewfinder. Battery sensor's adjustment errors are displayed at the right of the "past errors" area.	All sensors on All but sensors on
6	PASS mode	Track shift mode (1/4 shift)	All sensors on
7	Camera adjustment mode	Camera adjustment mode	[VCR interrupted]
8	VCR adjustment mode	VCR adjustment mode	
9	Automatic switching point adjustment (STOP ADJ)	Play standard tape and call this mode. Switching point is automatically adjusted.	

① When the battery adjustment mode is selected from the camera adjustment mode with a cassette with the erase protection tab, the VCR is automatically put in the REC mode.

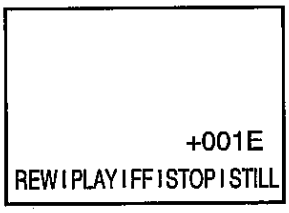
• Below discussed are these eight test modes.

① [TEST MODE 1] Sensors off mode
(SW No.2) All the sensors, except for the cassette controller switch, dew sensor and battery sensor, stay off. This enables to bring the VCR in the loading mode without tape. The VCR/camera performance can now be checked with no tape inside.

② [TEST MODE 2] Mechanism adjustment mode
(SW No.3) Used to adjust the tape traveling condition. Stable tape running is ensured for smaller RF envelope fluctuations and better ATF tracking, which would otherwise cause poor playback. The following actions are taken.
① Automatic SP/LP detection prohibited
② Different-mode detection prohibited
③ ATF sampling limited to center

③ [TEST MODE 3] Automatic battery alarm adjustment
(SW No.4) Used to automatically adjust the voltage level which makes the "battery" appear on the LCD display.

④ [TEST MODE 4] Battery alarm check/error display
(SW No.5)
- The difference between the preset battery alarm voltage and the current supply voltage is displayed as follows.
- A past error is displayed at the right of the current battery alarm error.



⑤ [TEST MODE 5] PASS mode
(SW No.6) Used to adjust the tape traveling condition. The tracking is shifted by 1/4 from the center to make the tape running-related RF envelope fluctuations easier to observe.

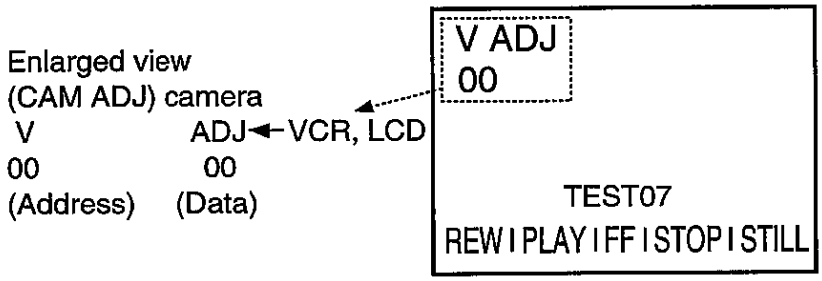
⑥ [TEST MODE 6] Camera adjustment mode
(SW No.7) Used to adjust the camera section. (For details, see Servicing the Camera Section.)

⑦ [TEST MODE 7] VCR adjustment mode
(SW No.8) Used to adjust the VCR section. (For details, see Servicing the VCR Section.)

⑧ [TEST MODE 8] Automatic switching point adjustment
(SW No.9) Used to automatically adjust the playback switching point. (For details, see Automatic Adjustment of the Playback Switching Point.)

6-3-2. Setting up the VCR section adjustment mode (camera section adjustment)

- Select adjustment items by using addresses. Rewrite the adjustment data to change the settings. Below shown the adjustment procedures and on-screen display.

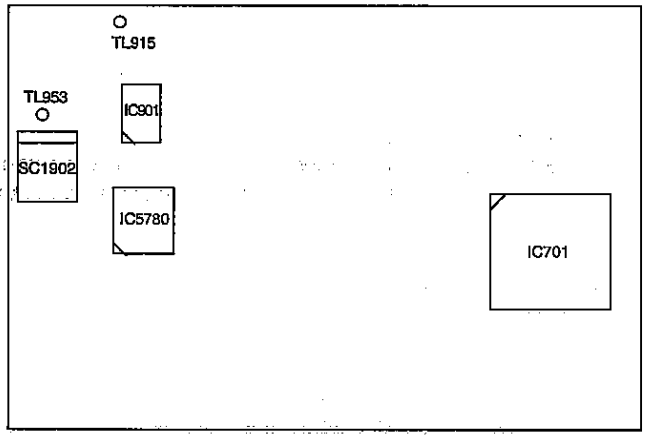


	Procedural steps	Display (: flashing)
①	Turn up or down the flashing hexadecimal number with the FF or REW key to select the address of a desired adjustment item. (Initial address: 00H) Note: The addresses change as follows. 7E — 7F — 00 — 01 — 02	V ADJ
②	Press the PB key to read the data of the selected address.	V ADJ 2C A3
③	Turn up or down the data setting with the FF or REW key. The data display starts flashing.	V ADJ 2C
④	Press the PB key again to write the data setting into the selected address.	V ADJ 2C 72
⑤	Press the STOP key in the above step ② or ④, and the screen returns back to the step ①.	V ADJ

When the FF or REW key is held down for 0.3 second or longer, the address selection is repeated in cycles of 100 msec. The data setting changes by ± 4 by holding the key down for 2 seconds or longer.

6-4. ADJUSTING THE VCR CIRCUIT

• Test Points on the Video PWB



6-4-1. ADJUSTING THE SYSTEM CONTROLLER/SERVO CIRCUITS

1. Automatic playback switching point adjustment

Measuring instrument	Oscilloscope
Mode:	PB
Input signal (tape):	JIGWR5-5CSP
Test point:	—
Adjustment address:	—
Adjustment level:	—

* This model is provided with the automatic playback switching point detection/memory function. This point therefore cannot be shifted manually.

1) Set the CAMERA/OFF/VCR selector to the VCR position.
2) Play back the standard tape (JIGWR5-5NSP).
3) Press once the SW9 located on the adjustment tool. Automatic switching point adjustment starts.
4) When the adjustment is complete, the unit stops automatically.

Note:
If the automatic adjustment fails in a certain time, the tape is automatically ejected and the adjustment mode is cleared.

Major causes of adjustment failure:
1) The tape comes to its end during the adjustment.
2) The mechanism gets in trouble(drum sensor failure, for example) during the adjustment.
3) The adjustment does not finish in a certain period of time (head amplifier failure, for example).

2. Battery alarm adjustment

Measuring instrument	Check on the monitor screen
Mode:	CAMERA REC
Input signal (tape):	—
Test point:	TL915 and TL954 (GND)
Adjustment address:	—
Adjustment level:	+5.4 V ± 50mV

* Connect the camera section.

1) Set the CAMERA/OFF/VCR selector to the CAMERA position.
2) Load a blank tape.
3) Turn on the SW4 of the adjustment tool to set up the battery alarm adjustment mode.
4) Feed the supply voltage so that the voltage betweenTL915 and TL953 (GND) of 5.4 V.
5) Press the PLAY button to start automatic adjustment.
6) The battery symbol appears on the LCD display and disappears again. Now the adjustment is complete.
7) Turn off the SW3 of the adjustment tool.

6-4-2.Y/C CIRCUIT ADJUSTING PROCEDURE

(Use TP406 as an oscilloscope external trigger.)

Input Signal Conditions (Adjustment)
Instrument set-up
For electrical adjustments of the Y/C circuit, a pattern generator is used to feed the video signal. It is important that the video signal output is as specified. Connect the oscilloscope to the video input and output terminals. Make sure the oscilloscope waveform of the video signal is as follows: video sync signal's amplitude at about 0.3 Vp-p; video portion's amplitude at about 0.7 Vp-p; burst signal amplitude at about 0.3 Vp-p and its top and bottom as flat as possible; and the level ratio of the burst signal to the red bar at 0.30 : 0.66. Figure A shows the video signal waveform for the standard color bars.

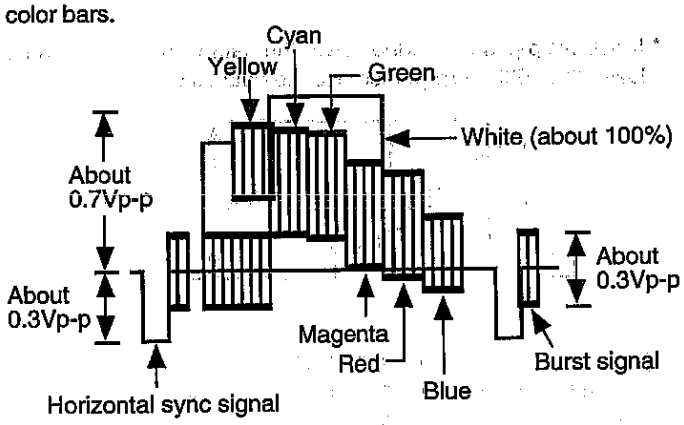


Figure A.
Color bar signal from pattern generator

1. EE level adjustment

Measuring instrument	Oscilloscope
Mode:	EE (VCR STOP)
Input signal (tape):	Color bar
Test point:	TP401/TP408 (GND)
Adjustment address:	21
Adjustment level:	500 ± 20 mVp-p

* Purpose: To optimize the brightness in the EE mode.
* On-monitor observation: Brightness to change.

• When there is no pattern generator available:

In this case, shoot a color bar chart (JIGCHART-4) with a completely adjusted camcorder. Set the illumination so that the camcorder's video signal output (terminated with 75-ohm impedance) is as shown in Figure B.
This color bar signal can be used as an input signal for electrical adjustments.

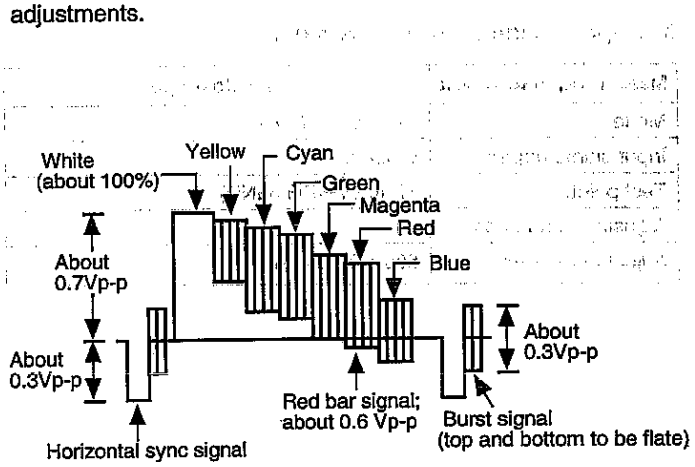
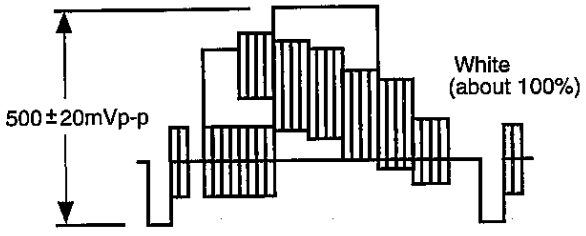


Figure B.
Color bar signal obtained by camcorder

* Caution
For Y/C circuit adjustment, the data value to be written in must be from 00 to FE. FF should not be written in.

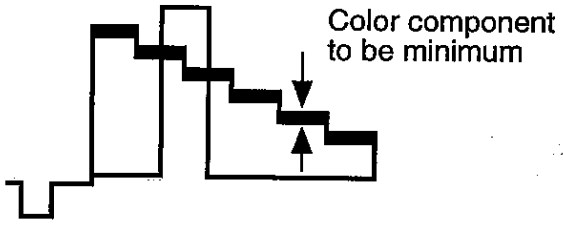
1) Set the adjusting jig to the VTR PWB TEST2 terminal (P6401), input the video signal into the JACK UNIT AV terminal.
2) Turn on the VTR adjusting switch of adjusting jig, and select the address 21.
3) Using TP401, adjust to get 500±20 mVp-p between sync tip and white peak.

* If 500 mVp-p is exceeded, increase the data value. If the level is lower than 500 mVp-p, lower the data value.



2. Comb filter adjustment

Measuring instrument	Oscilloscope
Mode:	EE (VCR STOP)
Input signal (tape):	Color bar
Test point:	TP402/TP408 (GND)
Adjustment address:	22 (Phase),23 (Gain)
Adjustment level:	Minimum chroma level



1) After setting the address 23 data to 80 in the same state as specified for EE adjustment, select the address 22.
2) Using TP402, adjust to minimize the residual chroma component.
3) Select the address 23, and perform the adjustment stated in item (2) above.
4) Select again the address 22, and execute adjustment (2).

* The comb filter adjusting procedure is as follows.

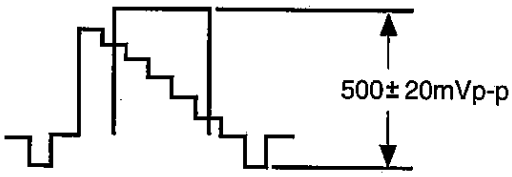
Address 23 Data 80 (Initialization) ⇨ Address 22 adjustment ⇨ Address 23 adjustment ⇨ Address 22 adjustment

3. Emphasis input level adjustment

Measuring instrument	Oscilloscope
Mode:	EE (VCR STOP)
Input signal (tape):	Color bar
Test point:	TP403/TP408 (GND)
Adjustment address:	24
Adjustment level:	500 ± 20 mVp-p

1) In the same state as specified for EE adjustment select the address 24.
2) Using TP403, make an adjustment to get 500±20 mVp-p between sync tip and white peak.

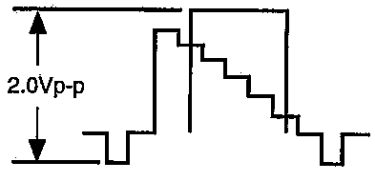
* If 500 mVp-p is exceeded, lower the data value. If the level is lower than 500 mVp-p, increase the data value.



4. Y playback level adjustment

Measuring instrument	Frequency counter
Mode:	PB
Input signal (tape):	JIGWR5-5CSP(PAL)/JIGWR5-5NSP(NTSC)
Test point:	TP405
Adjustment address:	29
Adjustment level:	2.0 ± 0.1 Vp-p

* In playback mode be sure to provide 75 ohm termination. It is allowed to connect to the monitor.



1) Disconnect the video signal input into the JACK terminal from the terminal, and set the address 4F data to C0.
2) In this state eject the tape, and insert the test tape.
3) Select the address 29. After selection the playback is set automatically.
4) Using TP405, make an adjustment to get 2.0±0.1 Vp-p between sync tip and white peak.

* If 2.0 Vp-p is exceeded, lower the data value. If the level is lower than 2.0 Vp-p, increase the data value.

* Unless the switching point has been adjusted, playback screen may be disturbed when the playback is adjusted.

5. Y-FM carrier adjustment

Measuring instrument	Oscilloscope
Mode:	EE (VCR STOP)
Input signal (tape):	None
Test point:	TP405/TP408 (GND)
Adjustment address:	25
Adjustment level:	4.39 ± 0.02MHz

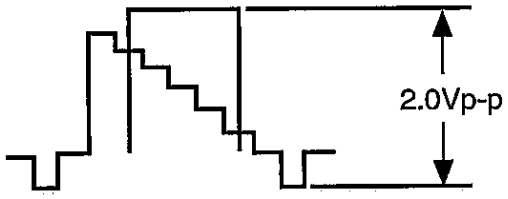
* If 4.39 MHz is exceeded, lower the data value. If the level is lower than 4.39 MHz, increase the data value.

1) While the tape is running after playback adjustment, eject the test tape to take it out.
2) While no input is given, select the address 26, and set the data value to 55.
3) Select the address 25, and while no input is given, make an adjustment so that the frequency counter gives an indication of 4.39±0.02 MHz, using TP404.

6. Y-FM deviation adjustment

Measuring instrument	Oscilloscope
Mode:	VCR REC/PB
Input signal (tape):	Color bar
Test point:	TP405/TP408 (GND)
Adjustment address:	26
Adjustment level:	2.0 ± 0.1Vp-p

* In playback mode be sure to ensure 75 ohm termination. It is allowed to connect to the monitor.

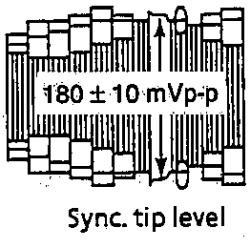


1) After completion of carrier adjustment eject the tape, insert the recordable tape, and input the video signal into the JACK terminal.
2) Select the address 26.
3) In this state press the camera side operation switch, REC S/S SW, to record.
4) Using the remote control, execute successively STOP, REW, PB to playback the place which has been recorded just now.
5) Using TP405, ascertain that 2.0±0.1 Vp-p is obtained between sync tip and white peak.
6) If the value obtained in Step 5 is not equal to the specified value, stop the playback by using the remote control, change the data value of address 26, and repeat the Steps 3 to 5.
7) If the specified value is obtained in Step 5, eject the tape to take it out. Thus, the deviation adjustment is completed.

*If 2.0 Vp-p is exceeded, lower the data value. If the level is lower than 2.0 Vp-p, increase the data value.
*There occurs a fluctuation of about 60 mVp-p as a result of change of data value by 10 bits.

7. Y recording current adjustment

Measuring instrument	Oscilloscope
Mode:	EE (VCR STOP)
Input signal (tape):	Color bar
Test point:	CH1; jig TP1 / jig TP14 (GND) CH2; jig TP7 / jig TP14 (GND)
Adjustment address:	86 (27)
Adjustment level:	180 ± 10 mVp-p

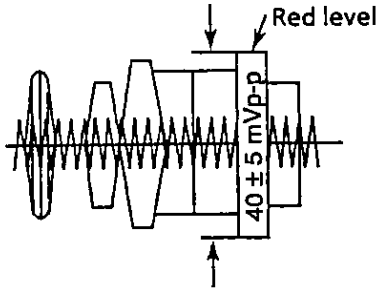


1) Select the address 27, and set the data value to 80.
2) Select the address 86.
3) Set the oscilloscope and adjusting jig as follows.
   ① Connect the SIG side of oscilloscope CH1 probe to the jig TP1, the GND side to the jig TP14.
   ② Connect the SIG side of oscilloscope CH2 probe to the jig TP7, the GND side to the jig TP14.
   ③ Using the oscilloscope, invert either CH1 or CH2 signal, and add two signals.
   ④ At this time match the CH1 and CH2 volts levels.
4) Change the data value, and make an adjustment to get the specified value at SYNC position.

*1 If the specified value is exceeded, lower the data value. If the level is lower than the specified value, increase the data value.
*2 If the specified value cannot be obtained even when the data value is changed to 00 to FE, set the data value of address 86 to a value closet to the standard value, and change the data of address 27 so as to get the specified value. The standard value change direction is the same as stated in Note *1.

8. C recording current adjustment

Measuring instrument	Oscilloscope
Mode:	EE(VCR STOP)
Input signal (tape):	Color bar
Test point:	The same as that specified for Y record current adjustment
Adjustment address:	85 (28)
Adjustment level:	Red portion; 40 ± 5 mVp-p



1) In the same state as that for Y record current adjustment (the observation point is identical) connect TP411 and TP408 with a proper short-jumper.
2) Select the address 28, and set the data value to 80.
3) Select the address 85, change the data value, and make an adjustment to get the specified value.

*1 If the specified value is exceeded, lower the data value. If the level is lower than the specified value, increase the data value.
*2 If the specified value cannot be obtained even when the data value is changed to 00 to FE, set the data value of address 85 to a value closest to the specified value, and change the data of address 28 so as to get the specified value.The specified value change direction is the same as that specified in Note *1.

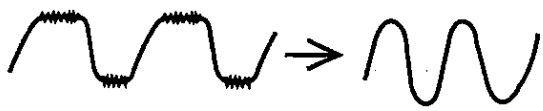
4) Disconnect the short-jumper which has been connected in Step 1. If it is left connected, record error may occur.

6-4-3. AUDIO ADJUSTMENT

1. Filter fo adjustment

Measuring instrument	Oscilloscope
Mode:	PB
Input signal (tape):	JIGWR5-5NSP
Test point:	SC6402 (3) (AUDIO IN/OUT 2)
Adjustment address:	2A
Adjustment level:	Clear waveform

1) Connect the oscilloscope to the AUDIO OUT terminal (adjustment tool TL2, TL3 GND).
2) Using the adjustment tool, set up the VCR adjustment mode. With the control keys, set up the address 2A.
3) Play the standard tape (JIGWR5-5NSP) and change the address data until the waveform on the oscilloscope screen becomes clearest (with no noise).



2. Deviation adjustment

Measuring instrument	VTVM (oscilloscope)
Mode:	PB
Input signal (tape):	JIGWR5-5NSP
Test point:	SC6402 (3) (AUDIO IN/OUT 2)
Adjustment address:	2B
Adjustment level:	-8 ± 0.5 dBs (820-920 mVp-p)

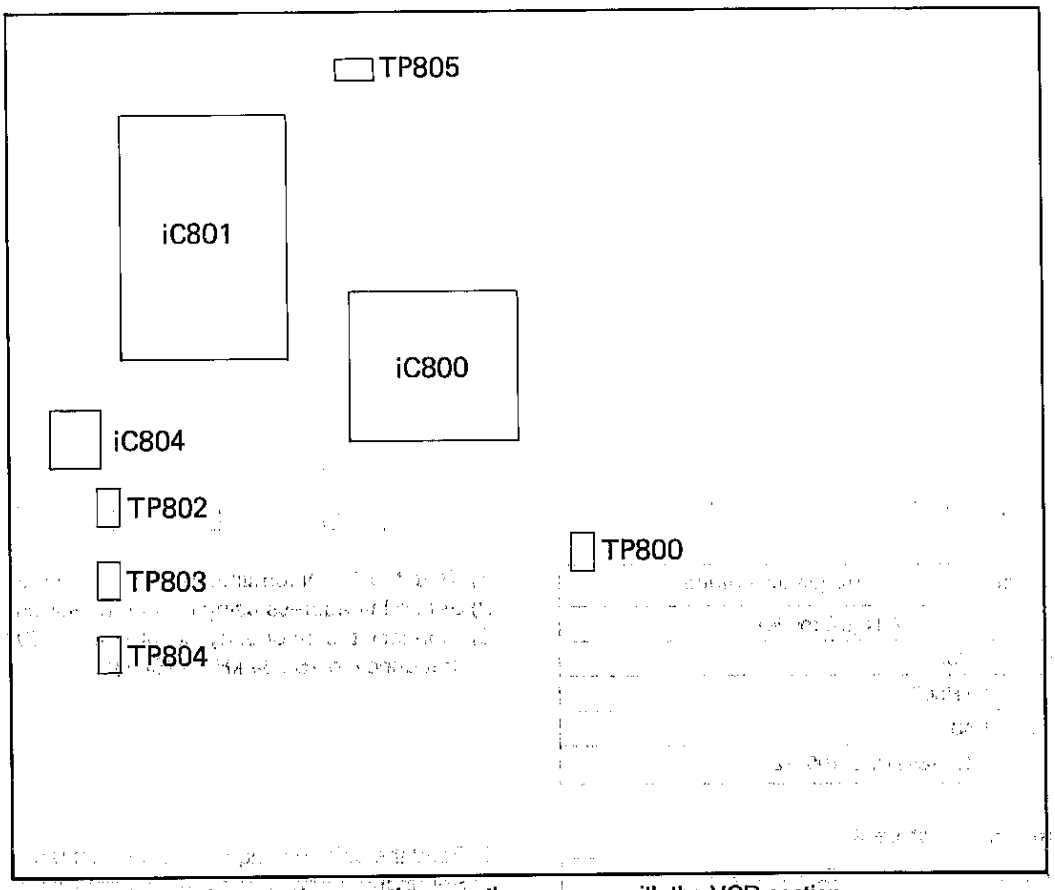
1) Connect the VTVM (oscilloscope) to the AUDIO OUT terminal (adjustment tool TL2, TL3 GND).
2) Play the standard tape (JIGWR5-5NSP) and measure the output level with the VTVM (oscilloscope).
3) Using the adjustment tool, set up the VCR adjustment mode. With the control keys, set up the address 2B.
4) If the level measured in the above step 2 is greater than specified, modify the data in the (small) direction with the control Keys; if in the other way, in the (large) direction.
5) Repeat the above steps 2, 3 and 4 until the output level becomes -8 ± 0.5 dBs (820-920 mVp-p).

Self-recording/playback level checking

Measuring instrument	VTVM (oscilloscope)
Mode:	REC → PB
Input signal (tape):	400 Hz, -8 dBs (870 mVp-p)
Test point:	AUDIO IN/OUT2
Adjustment address:	—
Adjustment level:	-8 ± 4 dBs (550-1380 mVp-p)

1) Using the menu key, set up the AUDIO IN mode.
2) Feed the audio signal of 400 Hz and -8 dBs to the AUDIO LINE IN terminal. Record the signal.
3) Connect the VTVM (oscilloscope) to the AUDIO OUT terminal.
4) Play back the recording and make sure that the level of the output waveform is -8 ± 4 dBs (550-1380 mVp-p on the oscilloscope). (In the playback mode, automatic switching is made from AUDIO IN to AUDIO OUT.)
5) If out of specification, readjust the above items 1 and 2 and recheck the self-recoding/playback level.

6-4-4. ADJUSTING THE LCD DISPLAY CIRCUIT



Adjustment procedures and connections are the same as with the VCR section.

1. Contrast adjustment

Measuring instrument	Oscilloscope
Mode:	VCR AV IN (EE mode)
Input signal (tape):	100% White
Test point:	TP803 (G-out)
Adjustment address:	40
Adjustment level:	4.0 ± 0.2Vp-p

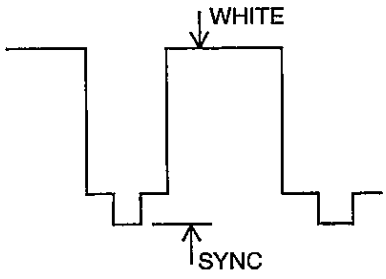
Set the backlight to the (dark) mode.

Perform the adjustment within one minute.
(If the 1H inversion is held long, the panel is deteriorated.)

1) Set up the address 47 "BRIGHT CTL LEVEL" without any signal to he AV IN terminal.

No signal input at the AV terminal.

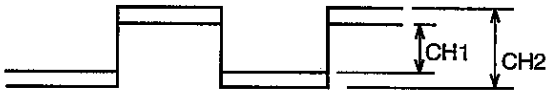
2) Feed the color bar signal to the AV IN terminal.
3) Connect TL811 to 4.9V. (The 1H inversion stops.)
4) Observe the output waveform at TP803 (G-out), Change the address data so that the level between the white peak and the sync tip be 4.0 ± 0.2 Vp-p.



2. White balance (red) adjustment

Measuring instrument	Oscilloscope
Mode:	VCR AV IN (EE mode)
Input signal (tape):	None
Test point:	TP803, TP804
Adjustment address:	41
Adjustment level:	Less than 0.1 V between CH1 and CH2 outputs

1) Keep the AV IN terminal without any signal.
2) Set up the address using the control switches.
3) Connect the oscilloscope's CH1 to TP803 (G-out) and its CH2 to TP804 (R-out).
4) Make the waveform minimum.

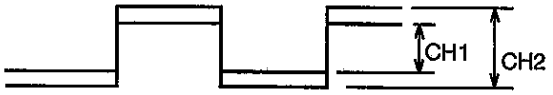


3. White balance (blue) adjustment

Measuring instrument	Oscilloscope
Mode:	VCR AV IN (EE mode)
Input signal (tape):	None
Test point:	TP803, TP802
Adjustment address:	42
Adjustment level:	Less than 0.1 V between CH1 and CH2 outputs

* Oscilloscope settings: Same as in Item 2 above

1) Keep the AV IN terminal without any signal.
2) Set up the address using the control switches.
3) Connect the oscilloscope's CH1 to TP803 (G-out) and its CH2 to TP802 (B-out).
4) Make the waveform minimum.



4. VCO adjustment

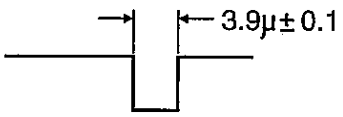
Measuring instrument	Frequency counter
Mode:	VCR AV IN (EE mode)
Input signal (tape):	None
Test point:	TP807
Adjustment address:	43
Adjustment level:	15.625 kHz ± 100 Hz

1) Keep the AV IN terminal without any signal.
2) Set up the address using the control switches.
3) Connect the frequency counter to TP807 and adjust the frequency to 15.734 kHz ± 100 Hz.

5. Horizontal position adjustment

Measuring instrument	Oscilloscope
Mode:	VCR AV IN (EE mode)
Input signal (tape):	Color bar
Test point:	TP807
Adjustment address:	44
Adjustment level:	3.9 ± 0.1 µs

1) Feed the color bar signal to the AV IN terminal.
2) Set up the address using the control switches.
3) Connect the oscilloscope's probe to TP807 (HD pulse).
4) Adjust the pulse width to 3.9 ± 0.1 µs.



6. Common bias adjustment

Measuring instrument	—
Mode:	VCR AV IN (EE mode)
Input signal (tape):	Color bar
Test point:	—
Adjustment address:	45
Adjustment level:	Blackest point

* Keep aging for about 1 minute before starting this adjustment. (This is important for stabilizing the backlight's brightness.) Keep the backlight in the BRIGHT mode.

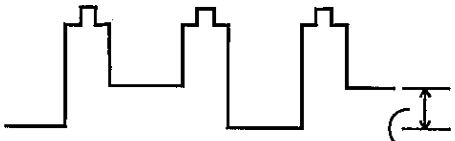
1) Feed the color bar signal, with the color component removed, to the AV IN terminal.
2) Set up the address using the control switches.
3) Observing the LCD monitor, change the address data until the black portion gets blackest. (Preset response time: 0.6 sec.)

7. Burst phase adjustment

Measuring instrument	Oscilloscope
Mode:	VCR AV IN (EE mode)
Input signal (tape):	Monochrome signal (R)
Test point:	TP802
Adjustment address:	49
Adjustment level:	Minimum

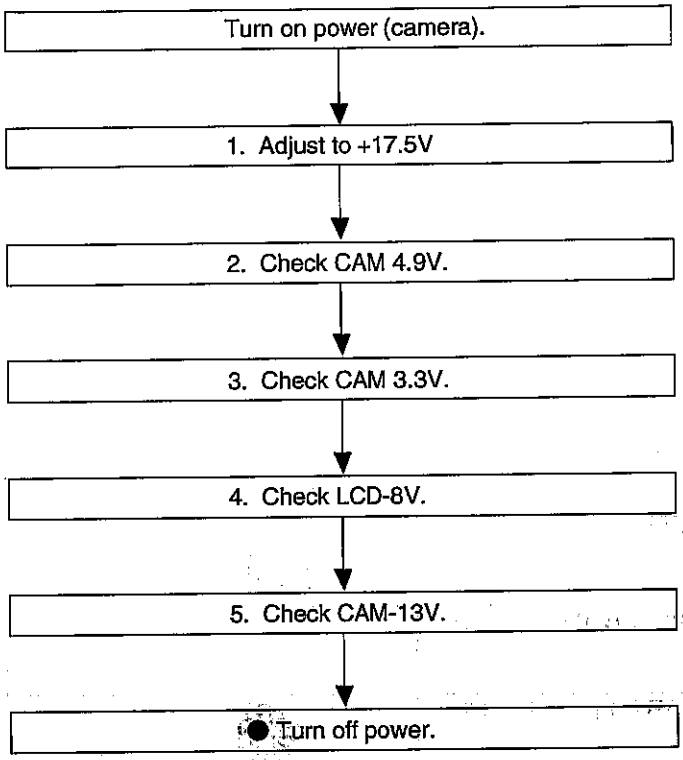
* Make the adjustment as quick as possible to prevent deterioration of LCD panel. Disconnect TL811 from the 4.9V connector within approx. 30 seconds.

1) Feed the monochrome signal input (R signal) to AV input.
2) TP802(B-OUT) : Oscilloscope.
3) Connect TL811 to 4.9V(1H reverse stops.)
4) Set the color CTL (address 28) data to 70.
5) Set the signal level difference every 1H to the minimum.



6-5. POWER CIRCUIT ADJUSTMENT

6-5-1. POWER CIRCUIT ADJUSTMENT PROCEDURE



6-5-2. POWER CIRCUIT ADJUSTMENT METHOD

● Input 6V from the battery terminal, and set the power switch to the camera side.

1. Adjustment to +17.5V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 726
Adjustment address	20H
Standard	17.5V ± 0.05V

1) Make an adjustment so that the digital voltmeter indicates 17.5V ± 0.05V.

2. Checking of CAM 4.9V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 913
Adjustment address	
Standard	4.90V ± 0.05V

1) Check that the digital voltmeter indicates 4.87V ± 0.05V.

3. Checking of CAM 3.3V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 912
Adjustment address	
Standard	3.3V ± 0.1V

1) Ascertain that the digital voltmeter indicates 3.3V ± 0.1V.

4. Checking of LCD-8V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 910
Adjustment address	
Standard	-8.0V ± 0.4V

1) Ascertain that the digital voltmeter indicates -0.8V ± 0.4V.

5. Checking CAM-13V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 911
Adjustment address	
Standard	-16.0V ± 0.5V

1) Ascertain that the digital voltmeter indicates -16.0V ± 0.5V.

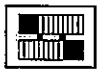
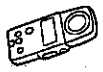
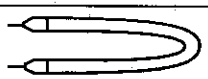
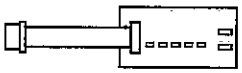
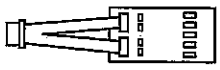
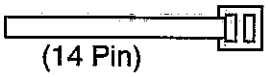
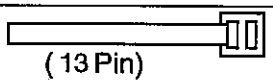
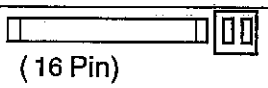
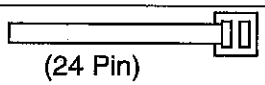
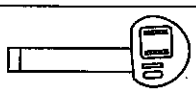
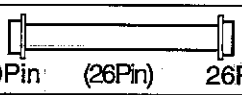
● Turn off power supply.

7. ADJUSTMENT OF CAMERA SECTION

7-1. SERVICING OF CAMERA SECTION

(1) Object, measuring instrument and jigs necessary for camera section servicing

- Gray scale chart
- Frequency counter
- Ripod fixing jig
- White pattern chart
- Illuminometer
- Extension cable
- Color bar chart
- Color temperature meter
- Adjustment mode setting jig
- Siemens star chart
- Color temperature conversion filter HOYA "LB-165"
- Switch jig for adjustment
- Oscilloscope
- Digital voltmeter
- Color video monitor
- Vectorscope
- Video output cable
- Halogen light(2 pcs.)
- AC adapter

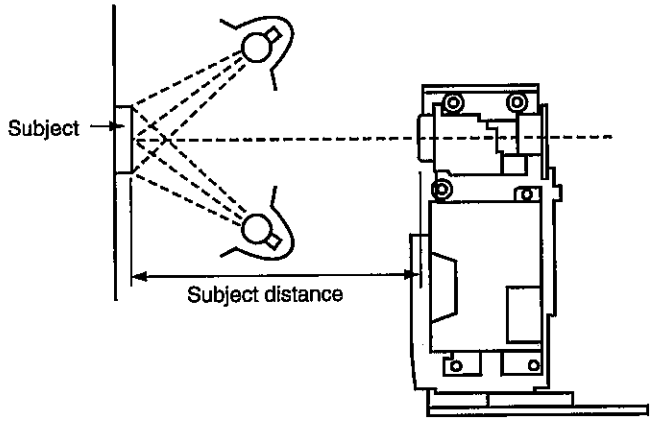
NO.	Jig Item	Parts Cord	Price Code	Configuration	Note
1	Gray Scale Chart (390 x 520 mm)	JIGCHART-1	CP		
2	Color Bar Chart (240 x 320 mm)	JIGCHART-4	※		
3	Illuminometer (0~3000Lux)	JIGMETER-1	CT		
4	Color Thermometer (1600~400000°k)	JIGMETER-3	FF		
5	Color Temperature Convertion Filter	JIGHOYA-LB165	BH		
6	Siement Star Chart	JIGCHART-11	CE		
7	Torque Driver (1.5 kg.cm)	JIGTD1500RTDH	CB		
8	PC Board Connector Extractor	JIGTH-SS10	AW		
9	Camera Adjustment Switch Board (connected to QCNW-1320TAZZ)	QCNW-1220TAZZ	BD		(PAL)
10	VCR Adjustment Switch Board with Extension Wire (connected to QPWBF2450TAZZ)	QPWBF2450TAZZ QPWBN2408TAZZ QCNW-1275TAZZ	BF BY BM		N ** N
11	Extension Wire (connected to SC4→SC702)	QCNW-1271TAZZ	AY	 (14 Pin)	N
12	Extension Wire (connected to SC3→SC701)	QCNW-1309TAZZ		 (13 Pin)	
13	Extension Wire (connected to SC2 →SC1)	QPWBH2418TAZZ	AY	 (16 Pin)	
14	Extension Wire (connected to SC9 →Lens Unit)	QCNW-1274TAZZ	AZ	 (24 Pin)	
15	Zoom Switch Wire (connected to Zoom SW → SC5)	QSW-Z0100TAZZ	AQ		N
16	Extension Wire (connected to Camera Adjustment Switch Board→ P8)	QCNW-1320TAZZ		 30Pin (26Pin) 26Pin	N
17	Extension Board (connected to VCR Adjustment Switch Board→P6401)	QPWBF2450TAZZ	BF	24Pin 26Pin	N

Note:

1. Color temperature convertion filter (jig item No.7) may be obtained from HOYA Optics in your local market. 2. N: Indicates the new jigs.
3. ※: Need Modification Please See S/M Page. 7-3. **: If use QPWBN2408TAZZ, Please Interchange Extension Wire. (Original→QCNW-1275TAZZ)

(2) SETTING

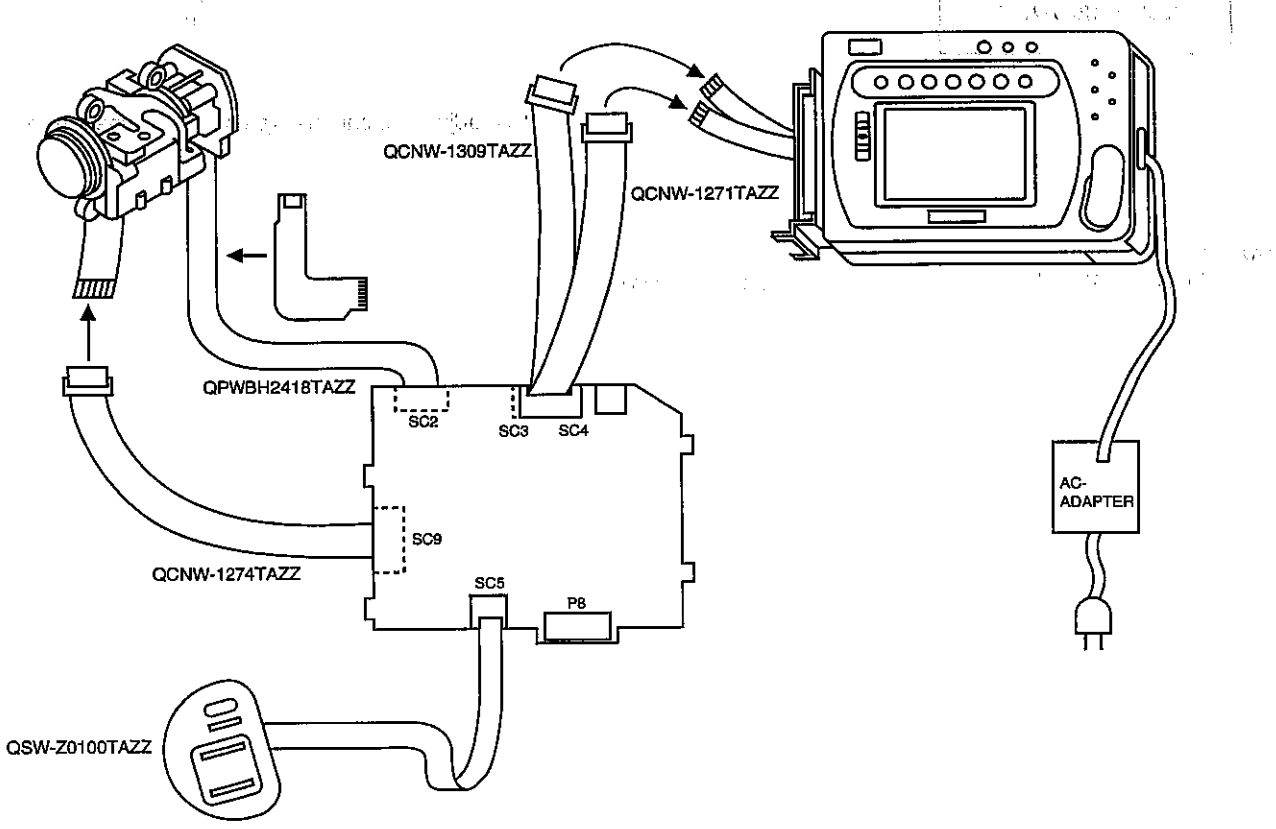
1) Set up the illumination of about 3000 lux that falls evenly over the entire test pattern. (Preferably prepare two or more light sources.) Adjust the color temperature to 3200 K.
2) With the camera at the WIDE lens position, the subject distance is short. Pay attention to give uniform illumination without any shadow on the subject.



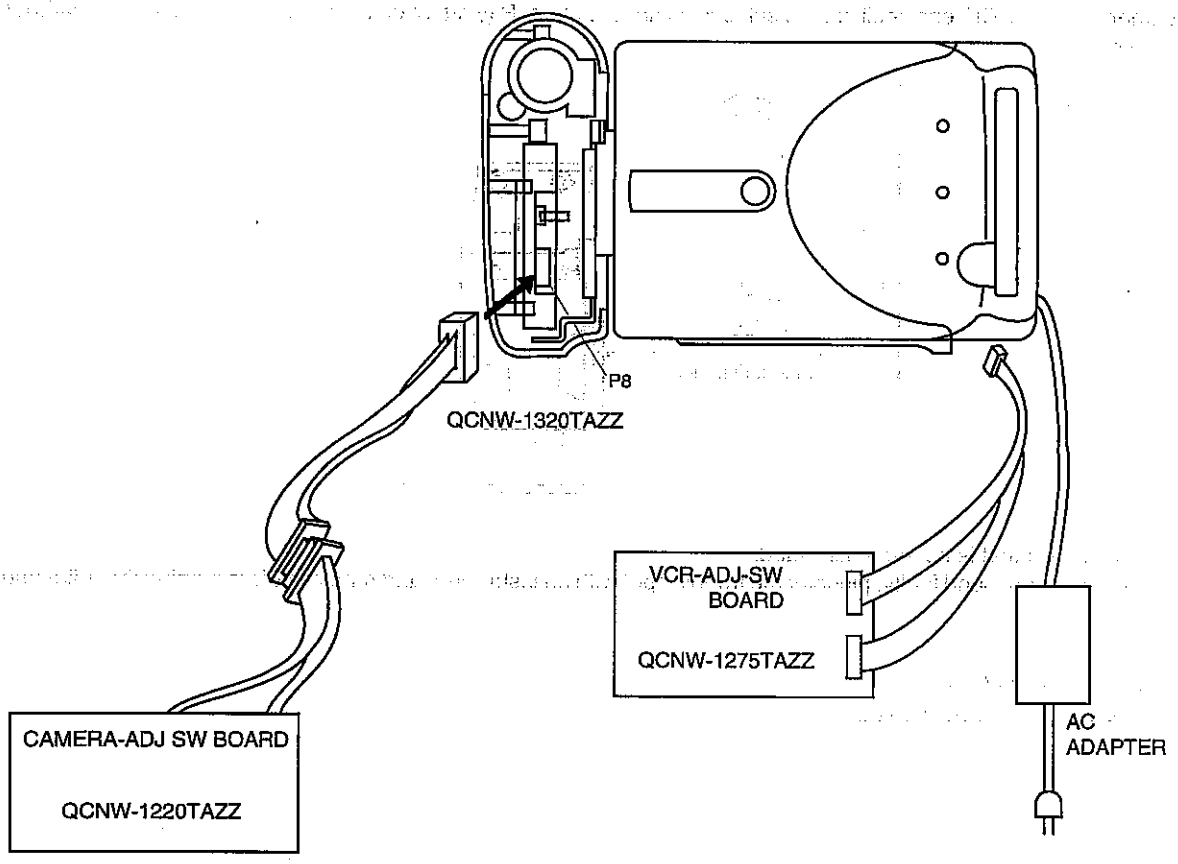
3) Use a new test pattern that is not dirty nor faded.
4) If the electrical circuitry is found faulty, pinpoint the trouble spot with an instrument and repair it before starting the adjustments.

(3) TYPICAL CONNECTIONS

• Connections for Camera Section Servicing



• **Connections for Camera Section Adjustment**



* To adjust the camera, remove the camera front cabinet.

NOTE:
If use QPWBN2408TAZZ Please Interchange Extension Wire.
(Original ➔ QCNW-1275TAZZ)

7-2. ADJUSTMENT PROCEDURE

This adjusting procedure covers all the steps for conducting the adjustments all the way. There are some steps that may be skipped, depending on the specific needs for servicing and adjustment.

1. OFD voltage adjustment
   * Preparation: Set up the auto focus adjustment mode.
2. Auto focus adjustment [basic iris and lens adjustments]
   * Preparation: Set up the camera signal line adjustment mode.
3. Sync level adjustment
4. Iris AE adjustment
5. Carrier balance, AF noise level adjustment
6. Burst gain adjustment
7. White balance fine adjustment
8. Color gain adjustment
9. Auto white balance adjustment

* Before making the auto focus adjustment 2, set up the auto focus adjustment mode, referring to the steps below.
To start the iris AE adjustment 4 and on, first set up the camera signal line adjustment mode, referring to the steps below.

• Setting up the auto focus adjustment mode

1. Set the power switch on the tool (QPWBF2450TAZZ) to the ON position.
2. Set all the other switches on the tools (QPWBF2450TAZZ and QCNW-1220TAZZ) to the OFF position. (Or make sure they are all at the OFF position.)
3. Set the LENS ADJ switch on the tool (QCNW-1220TAZZ) to the ON position.
4. Set the power switch on the tool (QPWBF2450TAZZ) to the CAMERA mode position.
5. Set the ADJ SW switch on the tool (QPWBF2450TAZZ) to the CAM ADJ position.
6. Now the camera section is in the auto focus adjustment mode.

• Setting up the camera signal line adjustment mode

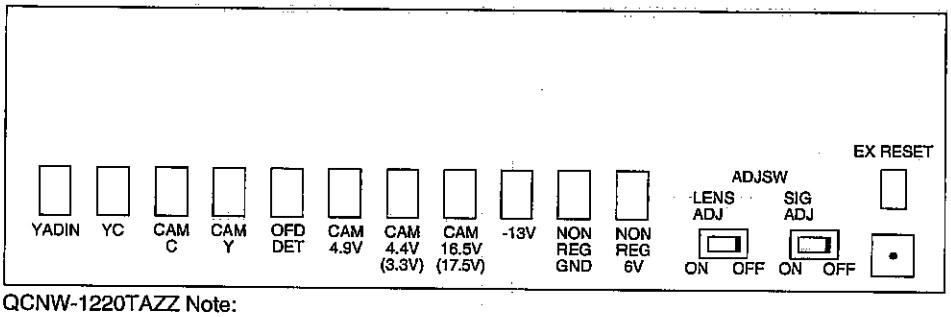
1. Set the power switch on the tool (QPWBF2450TAZZ) to the OFF position.
2. Set the above power switch to the CAMERA mode position.
3. Set all the other switches on the tools (QPWBF2450TAZZ and QCNW-1220TAZZ) to the OFF position. (Or make sure they are all at the OFF position.)
4. Call the manual focus mode.
5. Set the SIG ADJ switch on the tool (QCNW-1220TAZZ) to the ON position.
6. Press the RESET switch on the tool (QCNW-1220TAZZ).
7. Set the ADJ SW switch on the tool (QPWBF2450TAZZ) to the CAM ADJ position.
8. Now the camera section is in the camera signal line adjustment mode.

7-3. SETTING THE ADJUSTMENT MODES

Take the same steps as for the VCR adjustments. Refer to page 6-4.
NOTE: Never change any other address data than those to be adjusted.

7-4. ADJUSTING THE CAMERA SECTION

Location fo test points use the camera adjustment PWB (QCNW-1220TAZZ).



QCNW-1220TAZZ Note:

- Signal is not output to YC of TP.
- CAM4.4V and CAM 16.5V of TP have been changed to CAM3.3V and CAM17.5V, respectively.

7-4-1. OFD voltage adjustment

• Rough adjustment

Measuring instrument	Digital voltmeter
Subject:	None
Tape:	—
Test point:	OFD
Adjustment address:	1F9
Adjustment level:	CCD sensor's specified voltage ± 0.05 V

1) Get the camera ready to shoot.
2) Using the address 1F9, roughly adjust the voltage at the OFD test point to the level shown on the back of the CCD sensor.
3) Using the address 1FA, finely adjust the above voltage in the same way.

• Fine adjustment

Measuring instrument	Digital voltmeter
Subject:	None
Tape:	—
Test point:	OFD
Adjustment address:	1FA
Adjustment level:	CCD sensor's specified voltage ± 0.05 V

7-4-2. Auto focus adjustment

Before starting this adjustment, set up the auto focus adjustment mode.

• Basic iris adjustment

Measuring instrument	None
Subject:	More than 10 m away
Tape:	—
Test point:	None
Adjustment address:	1FF
Adjustment level:	09, 0A, 0B

1) Set up the auto focus adjustment mode.
2) Write the adjustment data 09,0A and 0B one after the other to the address 1FF, the adjustment are as follows.

Data	Adjustment
09	Hall offset
0A	Iris offset
0B	Iris close

• Lens adjustment

Measuring instrument	None
Subject:	More than 10 m away
Tape:	—
Test point:	None
Adjustment address:	—
Adjustment level:	03, 04, 06, 08

1) Set up the auto focus adjustment mode.
(This is unnecessary after the above basic iris adjustment has been made.)
2) Write the adjustment data 03, 04, 06 and 08 one after the other to the address FF. The adjustments are as follows.

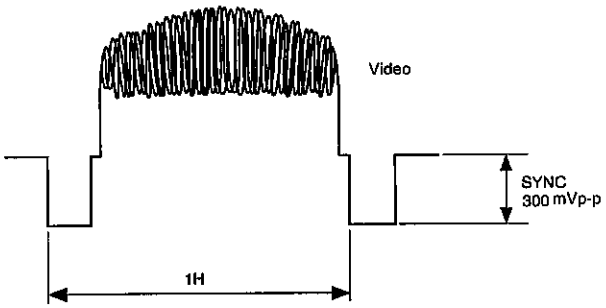
Data	Adjustment
03	Focus shielding plate
04	Zoom shielding plate
06	WIDE END ∞ position
08	TELE END ∞ position

7-4-3.

• Sync level adjustment

Measuring instrument	Oscilloscope
Subject:	Anything
Tape:	—
Test point:	CAM-Y
Adjustment address:	1F7
Adjustment level:	300 mVp-p

1) Get the camera ready to shoot.
2) Connect the oscilloscope to the CAM-Y test point on the adjustment PWB. Adjust the sync level to 300 mVp-p.

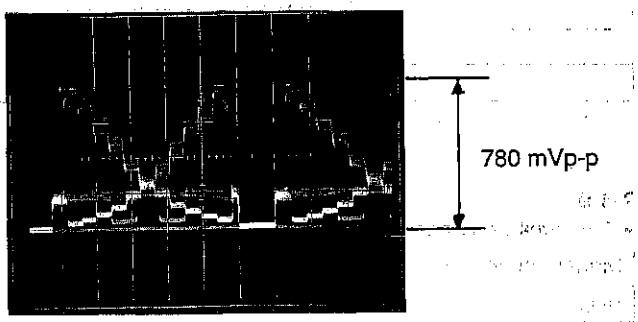


7-4-4.

• Iris AE adjustment

Measuring instrument	Oscilloscope
Subject:	Gray scale
Tape:	—
Test point:	YADIN
Adjustment address:	1FB
Adjustment level:	780mVp-p

1) Set up the camera signal line adjustment mode.
2) Shoot the gray scale in the standard way. Observe the YADIN signal on the oscilloscope screen and rewrite the data of address F6 to get an amplitude of 780 mVp-p as shown below.



7-4-5.

• Carrier balance , AF noise level adjustment

Measuring instrument	None
Subject:	Anything
Tape:	—
Test point:	None
Adjustment address:	1FF
Adjustment level:	01

1) Write the data 01 to the address 1FF.
The following adjustments are automatically carried on ; ① Carrier balance
② AF noise level
at AGC Gain Min , Middle and Max.

7-4-6.

• Burst gain adjustment

Measuring instrument	Oscilloscope
Subject:	None
Tape:	—
Test point:	CAM-C
Adjustment address:	1E4
Adjustment level:	300 mVp-p

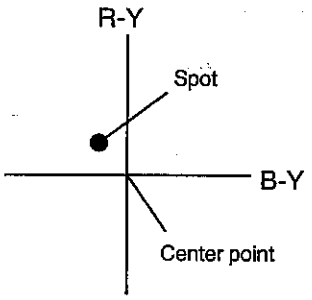
1) Measure the burst signal level on the oscilloscope. Using the address 1E4, adjust the burst amplitude to 300 mVp-p.

7-4-7.

• White balance adjustment

Measuring instrument	Vector scope
Subject:	Gray scale
Tape:	—
Test point:	VIDEO OUT
Adjustment address:	R-GAIN 004, B-GAIN 006
Adjustment level:	0 ± 3 % (Burst ratio)

1) As in the above adjustment 6, adjust the spot of the addresses 004 and 006 (R and B) to the center point of the vector scope.

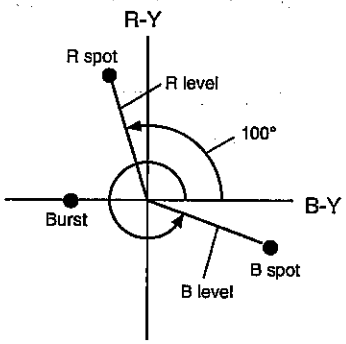


7-4-8.

• Color gain adjustment

Measuring instrument	Vector scope
Subject:	Color bar chart
Test point:	VIDEO OUT
Adjustment address:	R-Y GAIN 1EB B-Y GAIN 1E9 R-Y MAT 1E7 B-Y MAT 1E5
Adjustment level:	R-Y GAIN; Burst ratio 1.1 ± 0.1
	B-Y GAIN; Burst ratio 0.9 ± 0.1
	B-Y MAT; 107 ± 2°
	R-Y MAT; 344 ± 2°

1) Using the address 1EB, adjust the R level to a burst ratio of 1.8. With the address 1E9, adjust the B level to a burst ratio of 1.2.
2) Using the address 1E5, adjust the R phase to 107°. With the address 1E7, adjust the B phase to 344°.
3) Repeat the above steps 1) and 2).

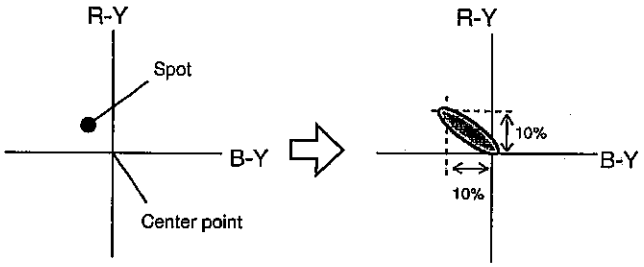


7-4-9.

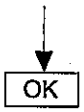
• Auto white balance adjustment

Measuring instrument	Vector scope
Subject:	Gray scale
Test point:	VIDEO OUT
Adjustment address:	R-OUT DOOR 00A B-OUT DOOR 00C
Adjustment level:	R-OUT DOOR; 10 ± 3 % B-OUT DOOR; -10 ± 3 %

1) Attach the color temperature conversion filter (JIGHOYA-LB165) to the front of the lens.
2) Using the addresses R-OUT DOOR 00A and B-OUT DOOR 00C, adjust the spot to the center pointo(0%).



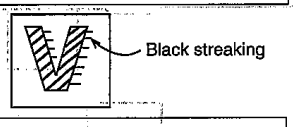
3) Take off the color temperature conversion filter.
4) Turn off the SIG ADJ switch and press the RESET switch. The signal adjustment mode is now cleared.



8. TROUBLESHOOTING

8-1. Classification of troubles

No function at all	YES	Check the DC/DC converter circuit and power circuit.
No tape ejection	YES	Check the system controller and loading motor circuit.
No LCD light-up	YES	Check the inverter transformer and DC/DC converter circuit.
No picture in EE mode	YES	* Check the camera section, Y/C circuit and LCD circuit.
No picture playback	YES	Check the Y/C circuit and head amplifier circuit.
No video recording	YES	Check the Y/C circuit and head amplifier circuit.
Streaking at self-recording/playback	YES	Check the Y/C circuit and head amplifier circuit.
Noises at regular intervals in playback	YES	Check the servo circuit.
No recorded characters on screen	YES	Check the LCD circuit and character generator (IC704).
No color in EE mode	YES	* Check the camera section and Y/C circuit.
No color in playback	YES	Check the Y/C circuit and head amplifier circuit.
No color in recording	YES	Check the Y/C circuit and head amplifier circuit.
No sound	YES	Check the audio circuit.
Error message (e.g. E007)	YES	Check the system controller and servo circuit.



Normal

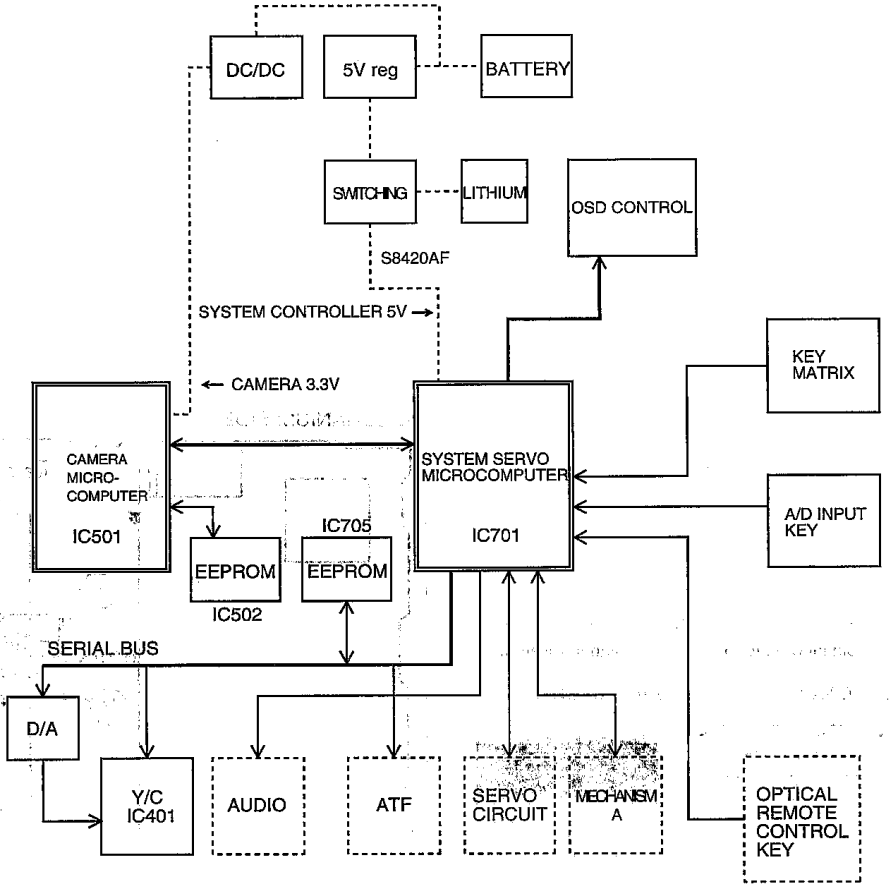
8-2. Troubleshooting for the camera section

No picture	YES	Check the auto iris circuit (IC553) and main signal line.
No color	YES	Check IC201 (DSP), IC241 (D/A) and their peripherals.
No auto white balance function	YES	Check IC501 (camera CPU) and its peripherals.
No auto focus function	YES	Check IC501, IC552 and their peripherals.
No power zoom function	YES	Check IC501, IC554 and their peripherals.

Normal

VL-E31S/H/X
VL-E17E

9. SYSTEM BLOCK DIAGRAM

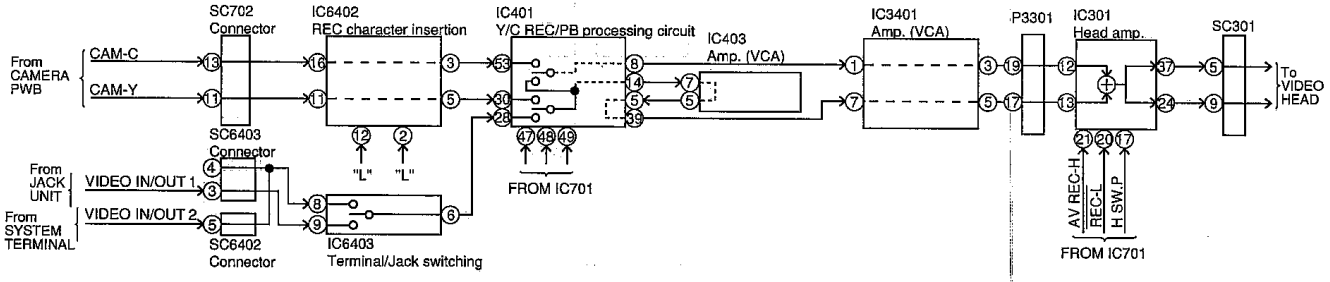


* On this model, all the circuits of the VCR and camera sections are controlled by IC701 and IC501.
1) IC501 and IC401 are controlled with the serial data from IC701.
2) IC705 is a memory that serves to store the adjustment data of the VCR section.
3) IC502 is a memory that serves to store the adjustment data of the camera section.
4) The other circuits and ICs are under the L/H level or the PWM control.

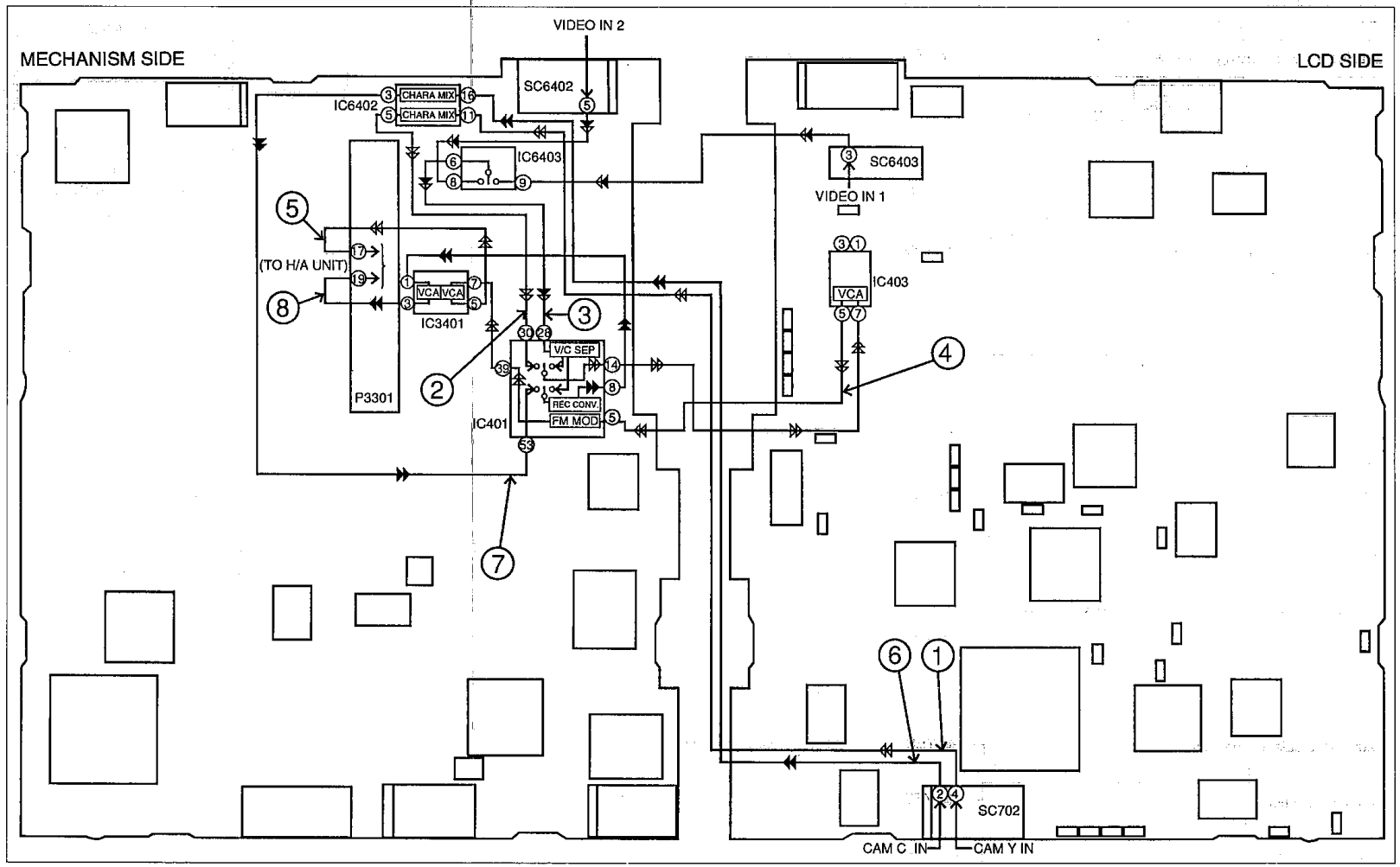
9-1. VTR SECTION BLOCK DIAGRAM Y/C recording system signal flow

*(Common to PAL/NTSC)

For E31S/H, the signal flows through the specified route when AV is input, but the mechanism does not operate. Therefore recording is impossible.



LUMINANCE SIGNAL ▷▷
CHROMA SIGNAL ▶▶
Y/C MIX SIGNAL ▶▷

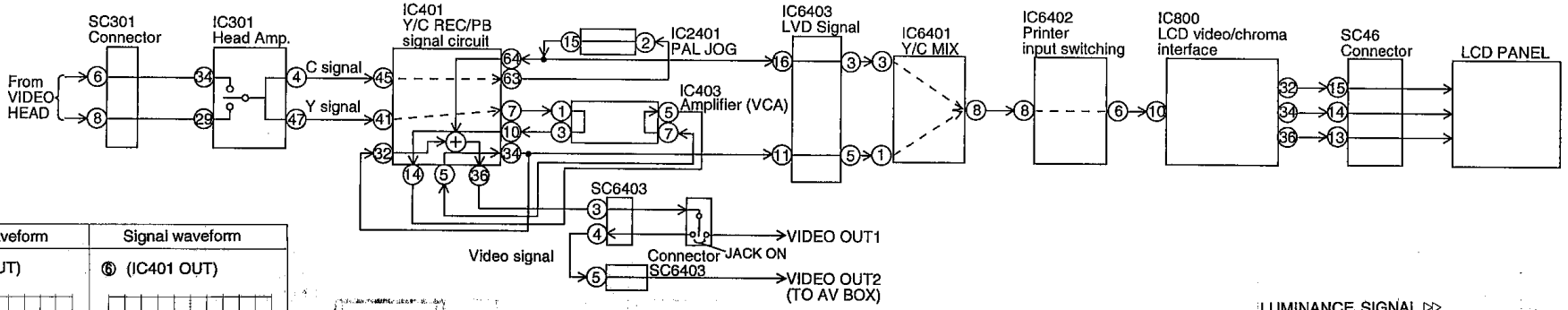


Signal waveform	Signal waveform
① (SC702 IN)	⑤ (IC3401 OUT)
1.0Vp-p	280mVp-p
② (IC401 IN)	⑥ (SC702 IN)
500mVp-p	0.3Vp-p (BURST)
③ (IC401 IN)	⑦ (IC401 IN)
500mVp-p	0.15Vp-p (BURST)
④ (IC401 IN)	⑧ (IC3401 OUT)
500mVp-p	180mVp-p (RED)

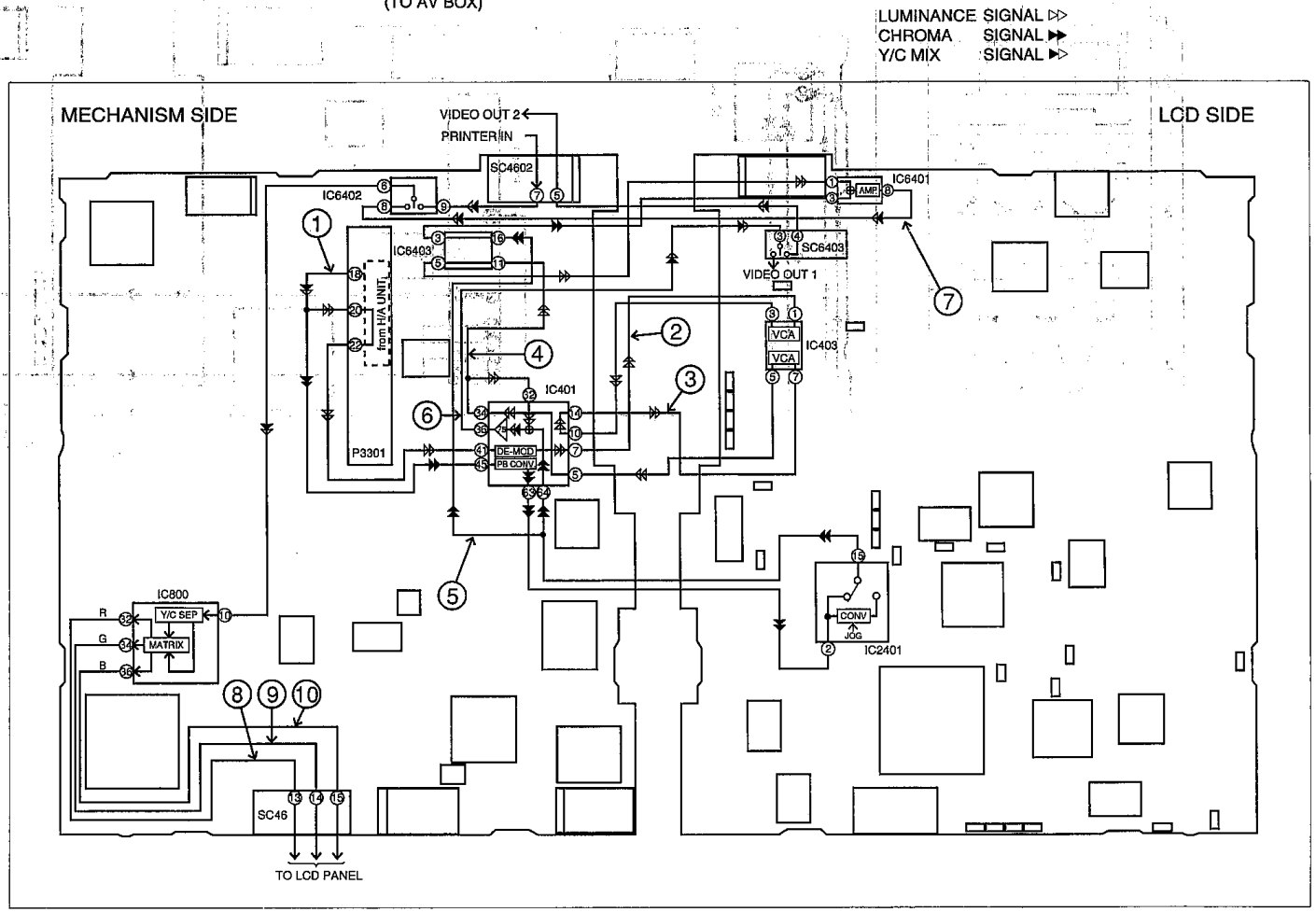
VL-E31S/H/X
VL-E17E

9-2. VTR SECTION BLOCK DIAGRAM Y/C playback signal flow

* The numbers in parentheses in the block diagram denote the page numbers of the related wiring diagrams.



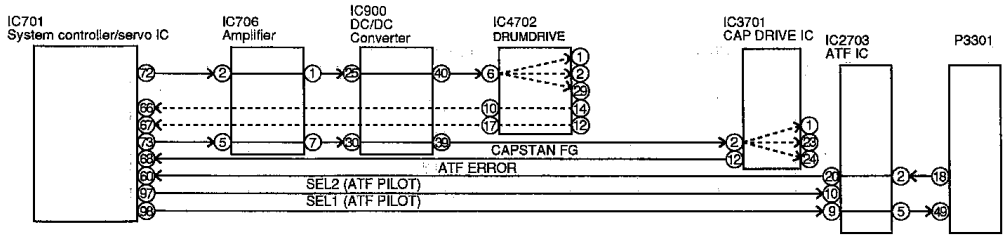
Signal waveform	Signal waveform
① (P3301 OUT)	⑥ (IC401 OUT)
600mVp-p(Typ)	2.0Vp-p
② (IC401 OUT)	⑦ (IC6401 OUT)
140mVp-p(Typ)	1.0Vp-p
③ (IC401 OUT)	⑧ (IC800 OUT)
500mVp-p(Typ)	9.0Vp-p
④ (IC401 OUT)	⑨ (IC800 OUT)
500mVp-p	9.0Vp-p
⑤ (IC2401 OUT)	⑩ (IC800 OUT)
0.15Vp-p(BURST)	9.0Vp-p

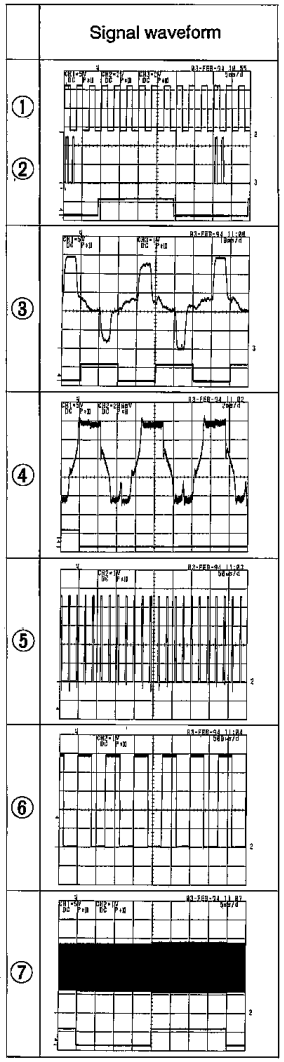


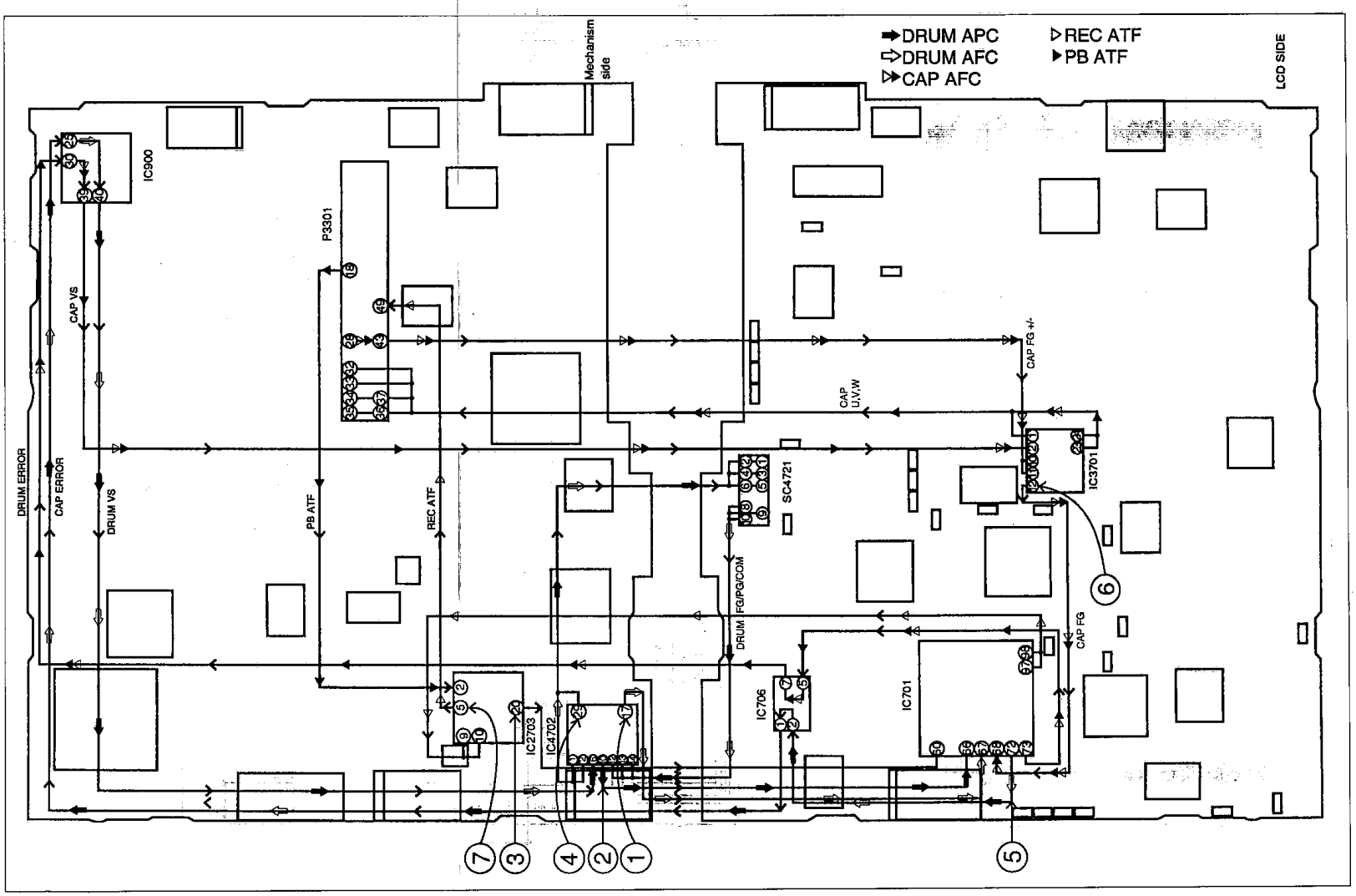
VL-E31S/H/X
VL-E17E

9-3. VCR SECTION BLOCK DIAGRAM Drum/capstan servo system signal flow

* The numbers in parentheses in the block diagram denote the page numbers of the related wiring diagrams.

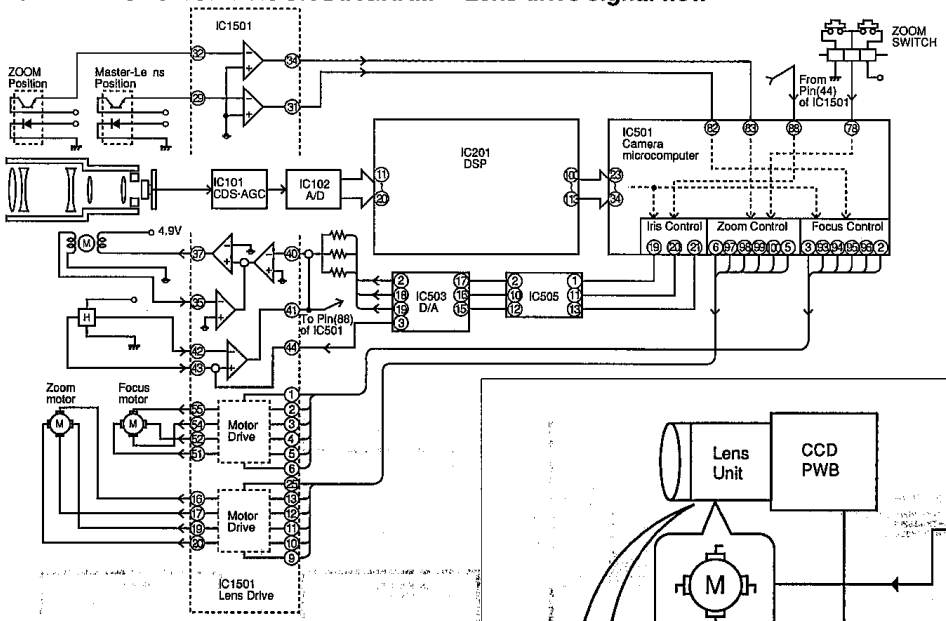


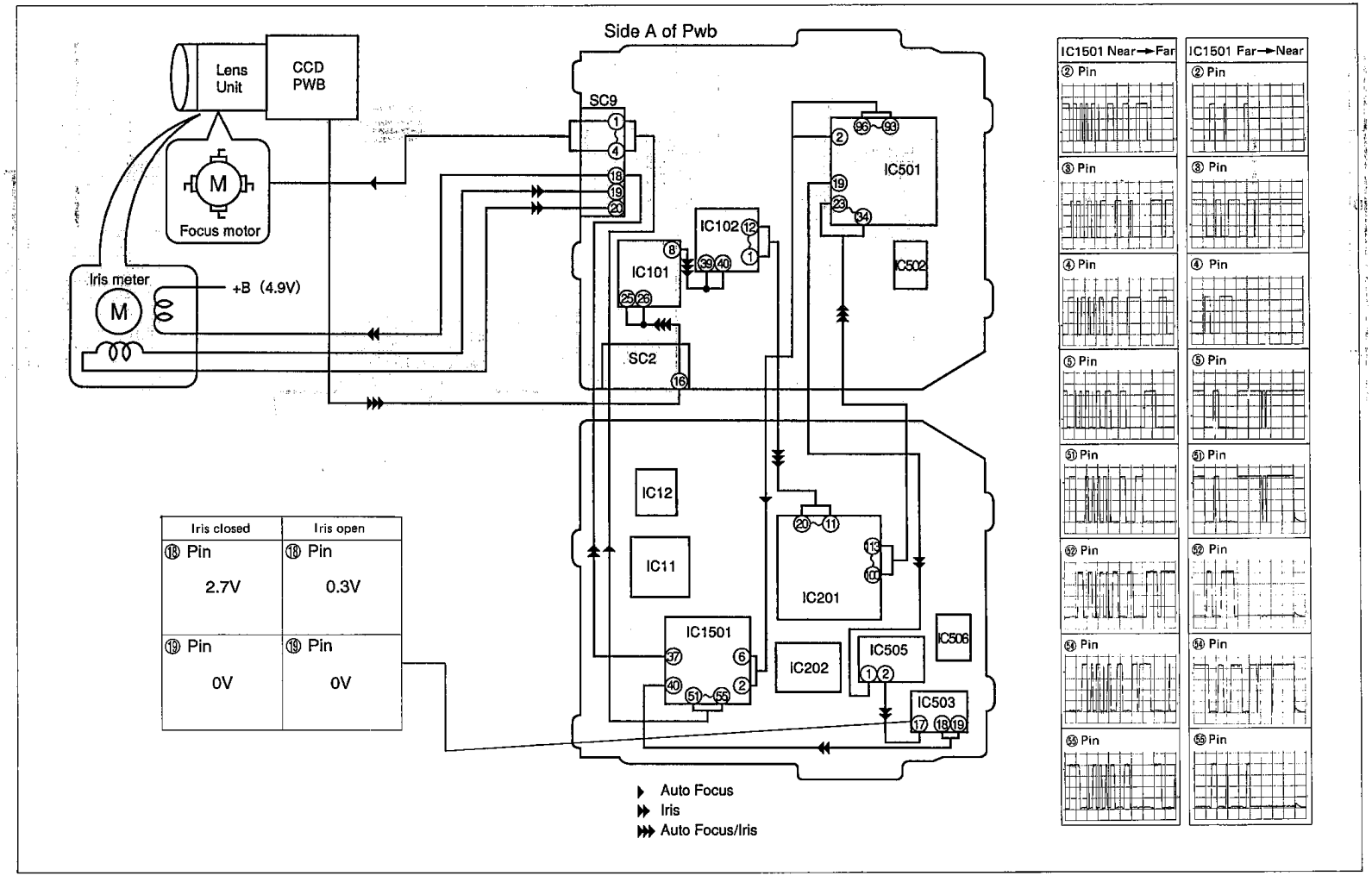




9-4. CAMERA SECTION BLOCK DIAGRAM Lens drive signal flow

* The numbers in parentheses in the block diagram denote the page numbers of the related wiring diagrams.





Iris closed	Iris open
⑱ Pin 2.7V	⑱ Pin 0.3V
⑲ Pin 0V	⑲ Pin 0V

Focus signal flow

1) The signal which is input into DSP si converted to wide band/ narrow band frequency component data in the digital auto-block of DSP.
2) This data is given to IC501 where it is processed, and then it is supplied to IC1501 as focus drive signal.
3) IC1501 drives the focus motor based on the focus drive signal.

Iris signal flow

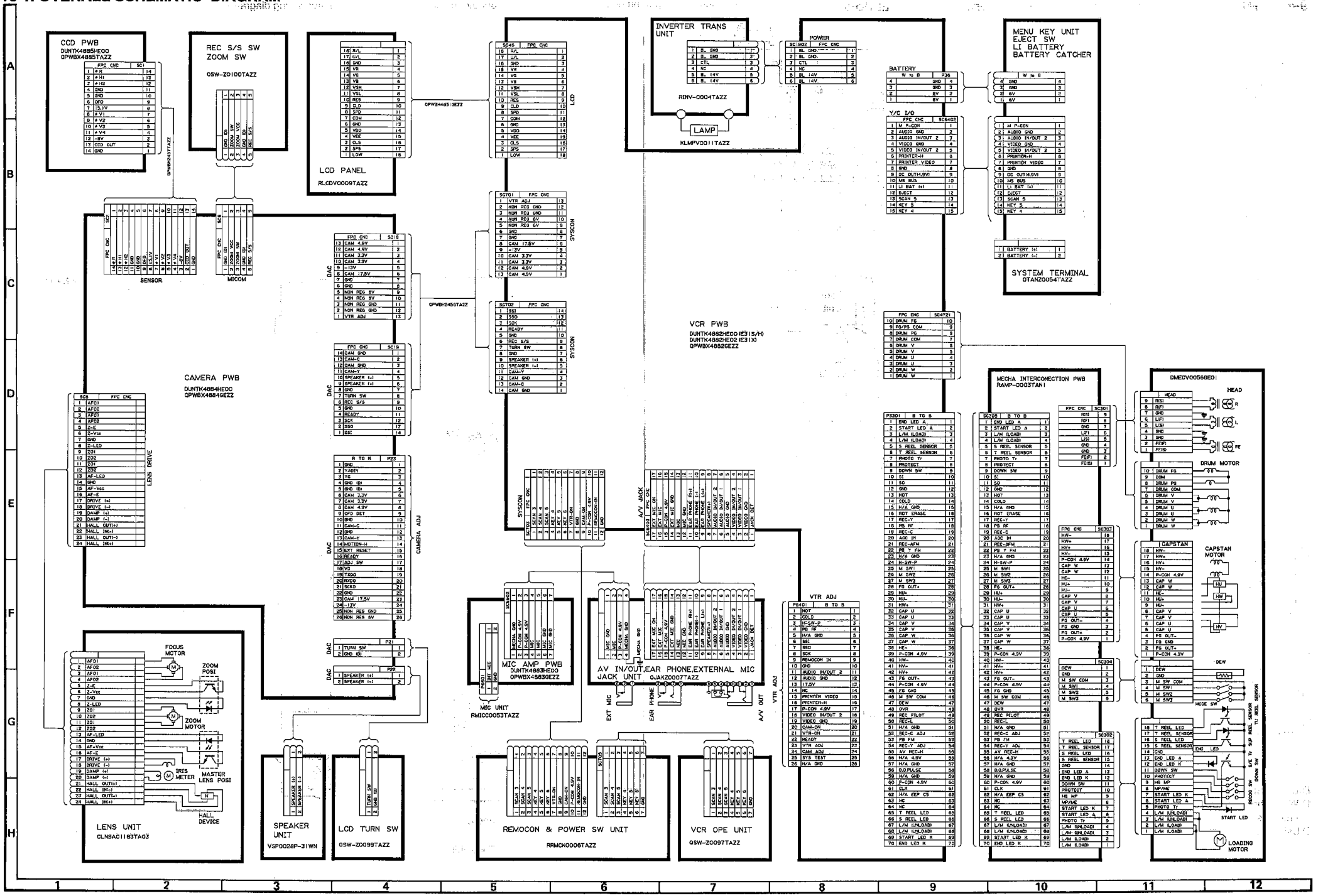
1) The signal which is input into DSP is converted to iris data in the digital auto-block of DSP.
2) The iris data is sent to IC501 where the iris control is determined based on the iris data.
3) For iris control, data is sent to IC503 to change DC voltage of IC503(18)(19).
4) As a result DC voltage of IC1501(37) changes to actuate the iris.

Zoom signal flow

1) When the zoom switch is pressed, DC voltage of IC501(78) changes, giving the zoom signal to OC1501.
2) Using the zoom control signal, IC1501 drives the focus motor.

VL-E31S/H/X
VL-E17E

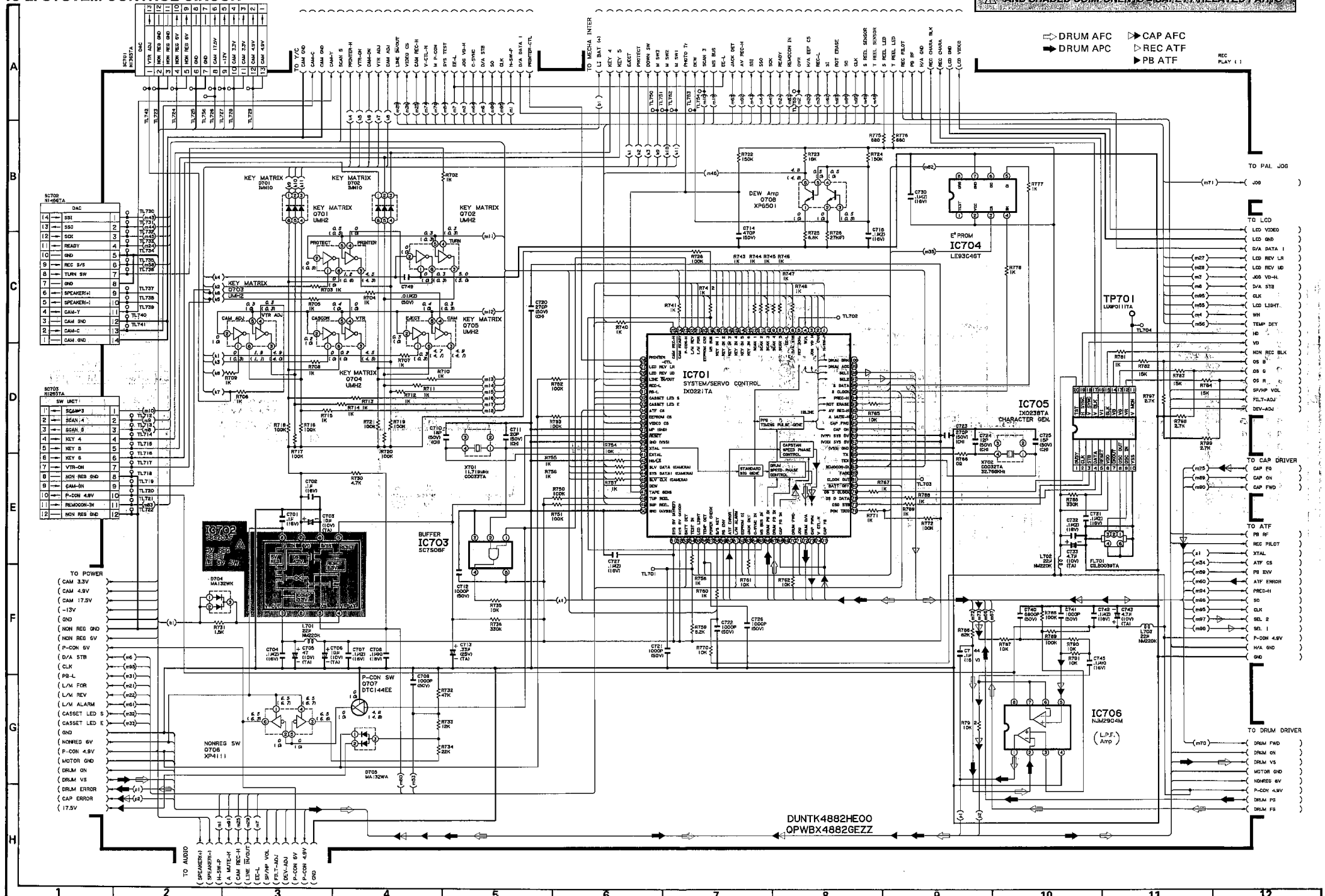
10-1. OVERALL SCHEMATIC DIAGRAM



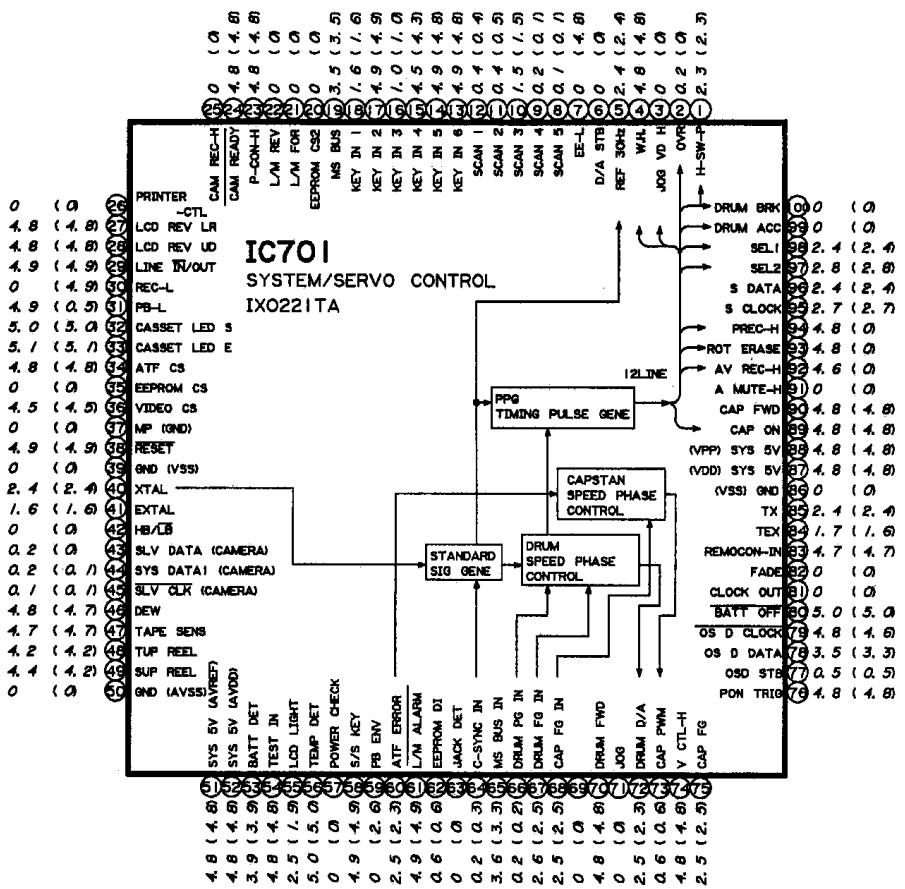
VL-E31S/H/X
VL-E17E

10-2. SYSTEM CONTROL CIRCUIT

⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS

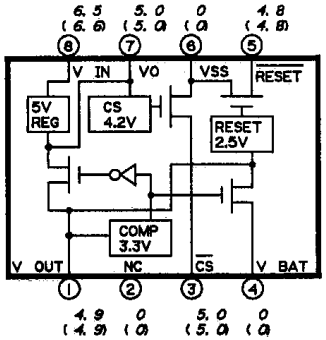


*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

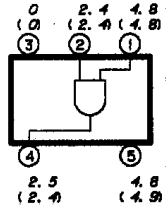


IC702
S8420AF

5V REG
RESET
LI 3V SW

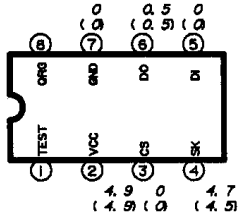


BUFFER
IC703
SC7S08F

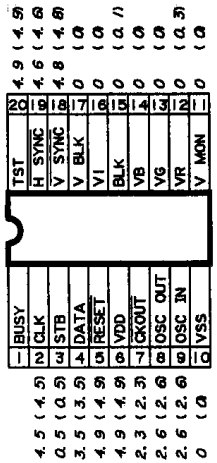


IC704
LE93C46T

E²PROM

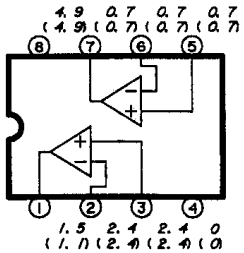


IC705
IX0238TA
CHARACTER GEN.



IC706
NJM2904M

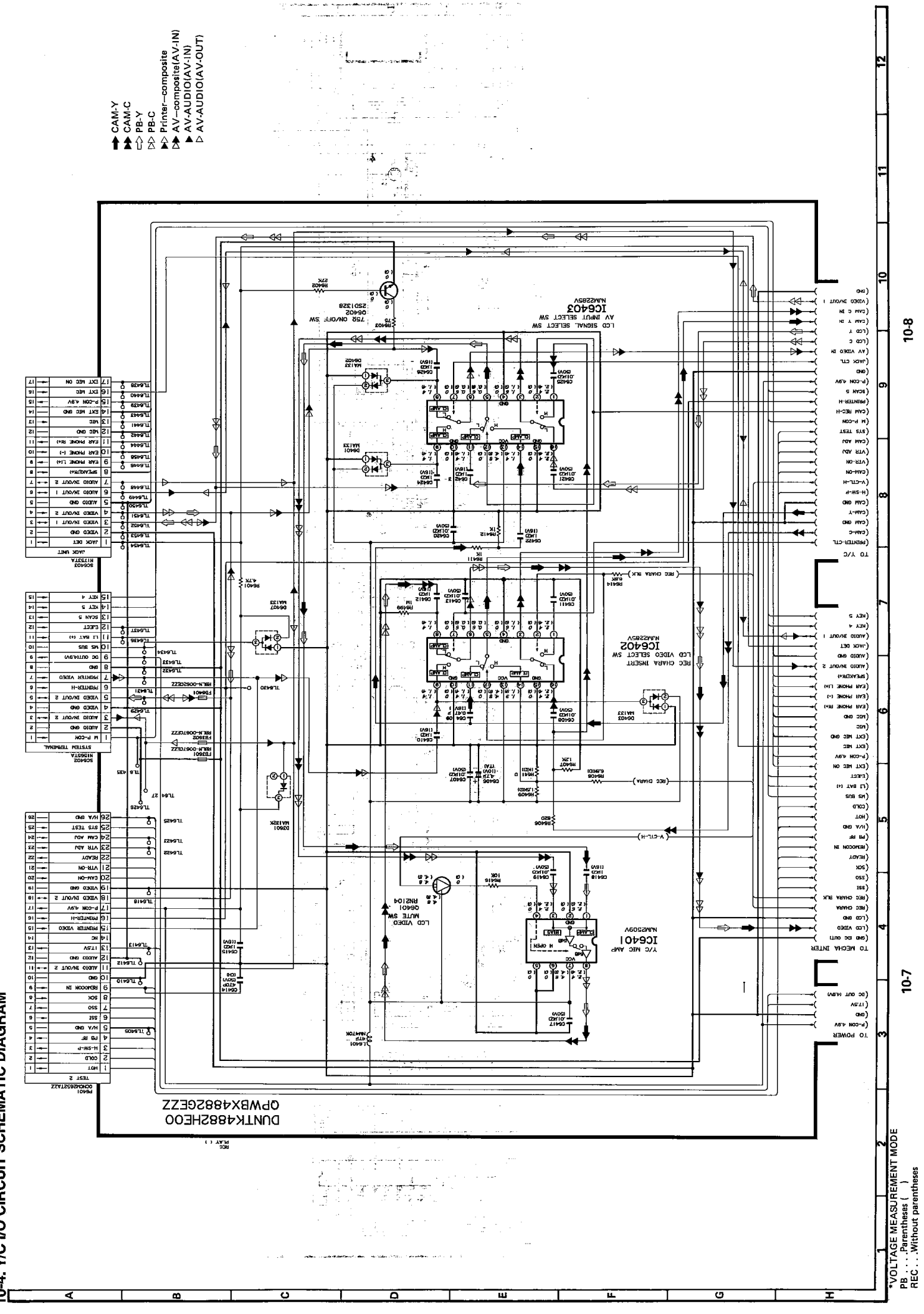
(L.P.F. Amp)



10-4. Y/C I/O CIRCUIT SCHEMATIC DIAGRAM

VL-E31S/H/X
VL-E17E

VL-E31S/H/X
VL-E17E

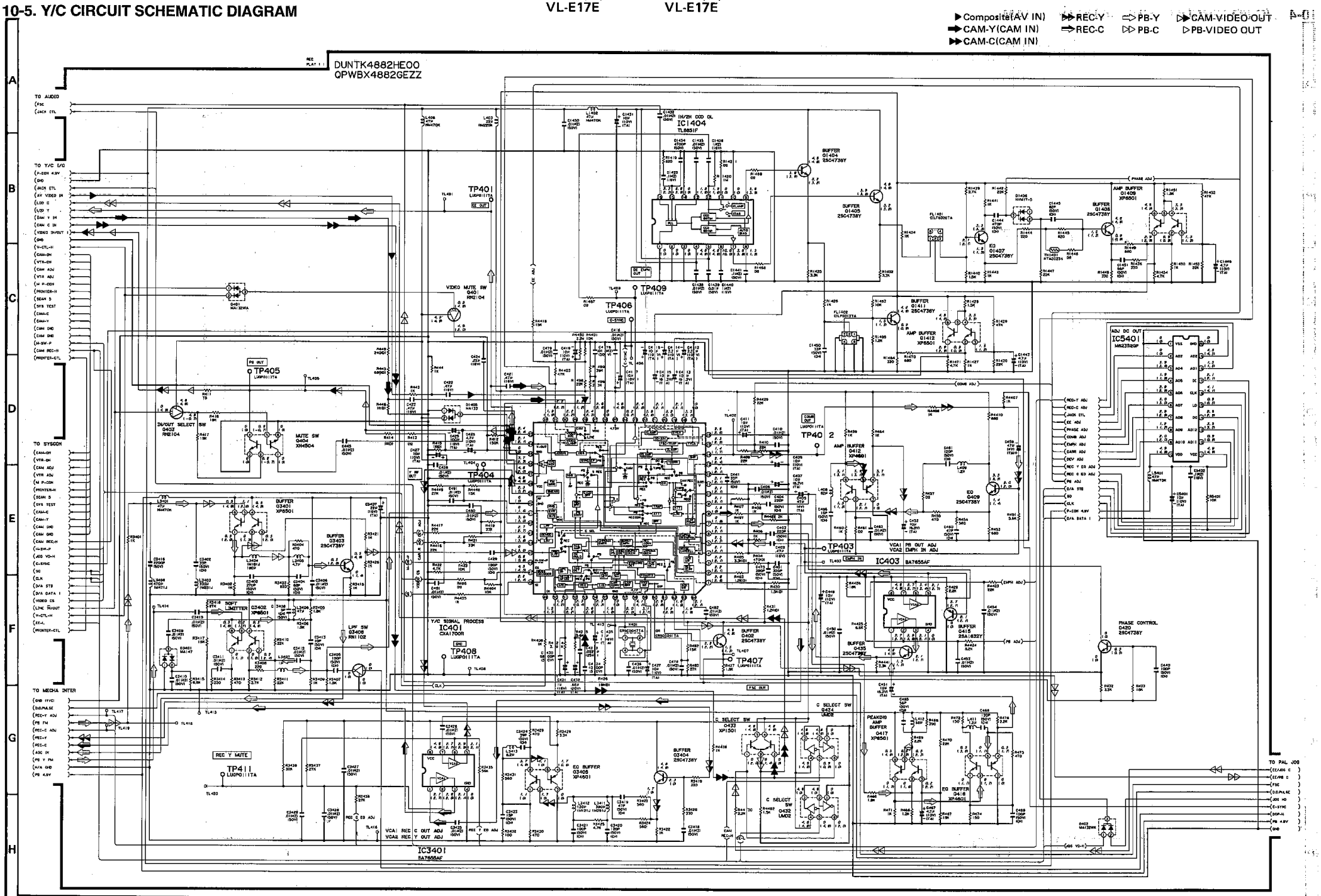


*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

10-5. Y/C CIRCUIT SCHEMATIC DIAGRAM

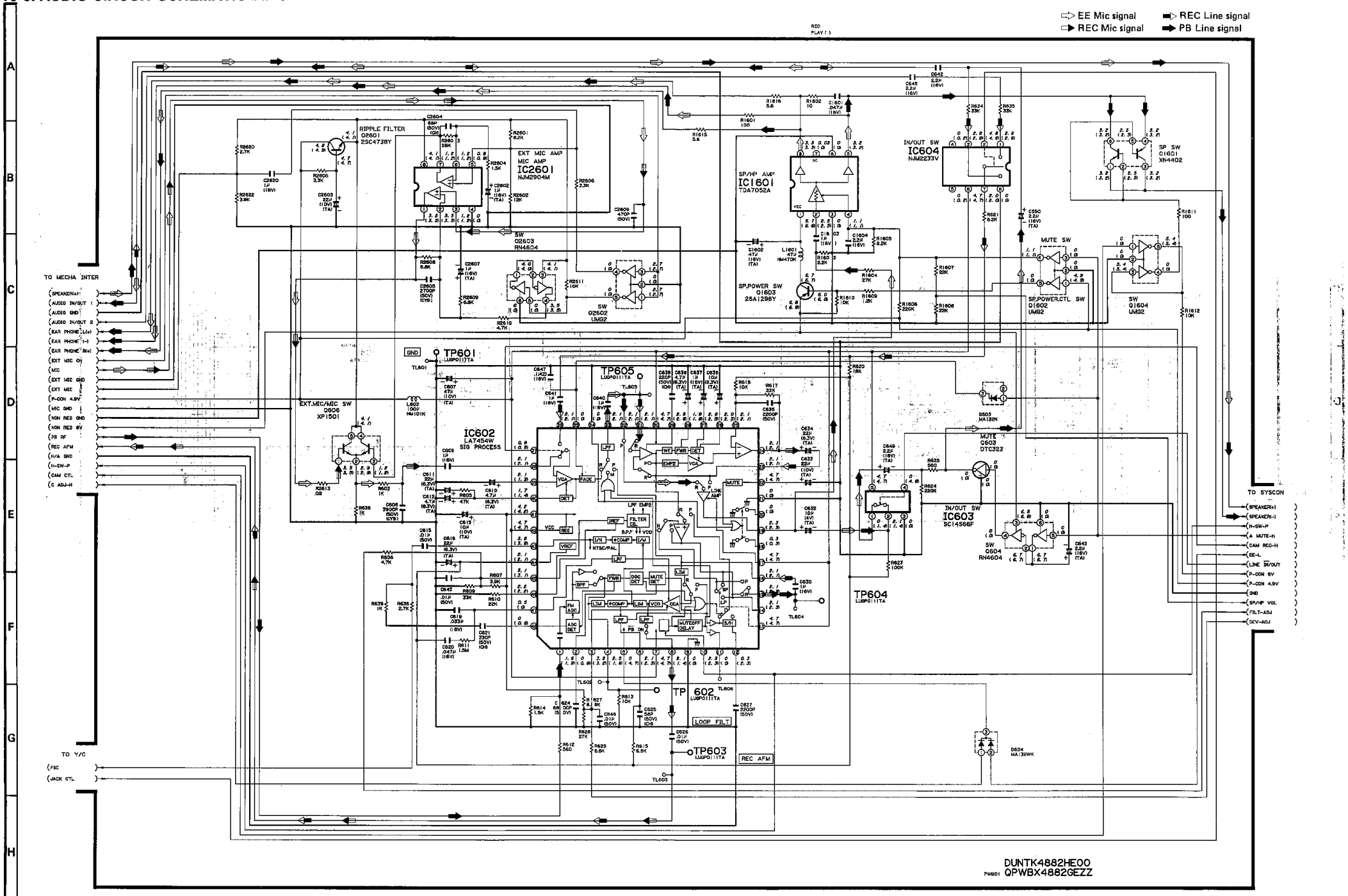
▶Composite(A-V IN) ▶▶REC-Y ⇨PB-Y ▷▶CAM-VIDEO OUT
➡CAM-Y(CAM IN) ⇒REC-C ▷▶PB-C ▷PB-VIDEO OUT
▶▶CAM-C(CAM IN)



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

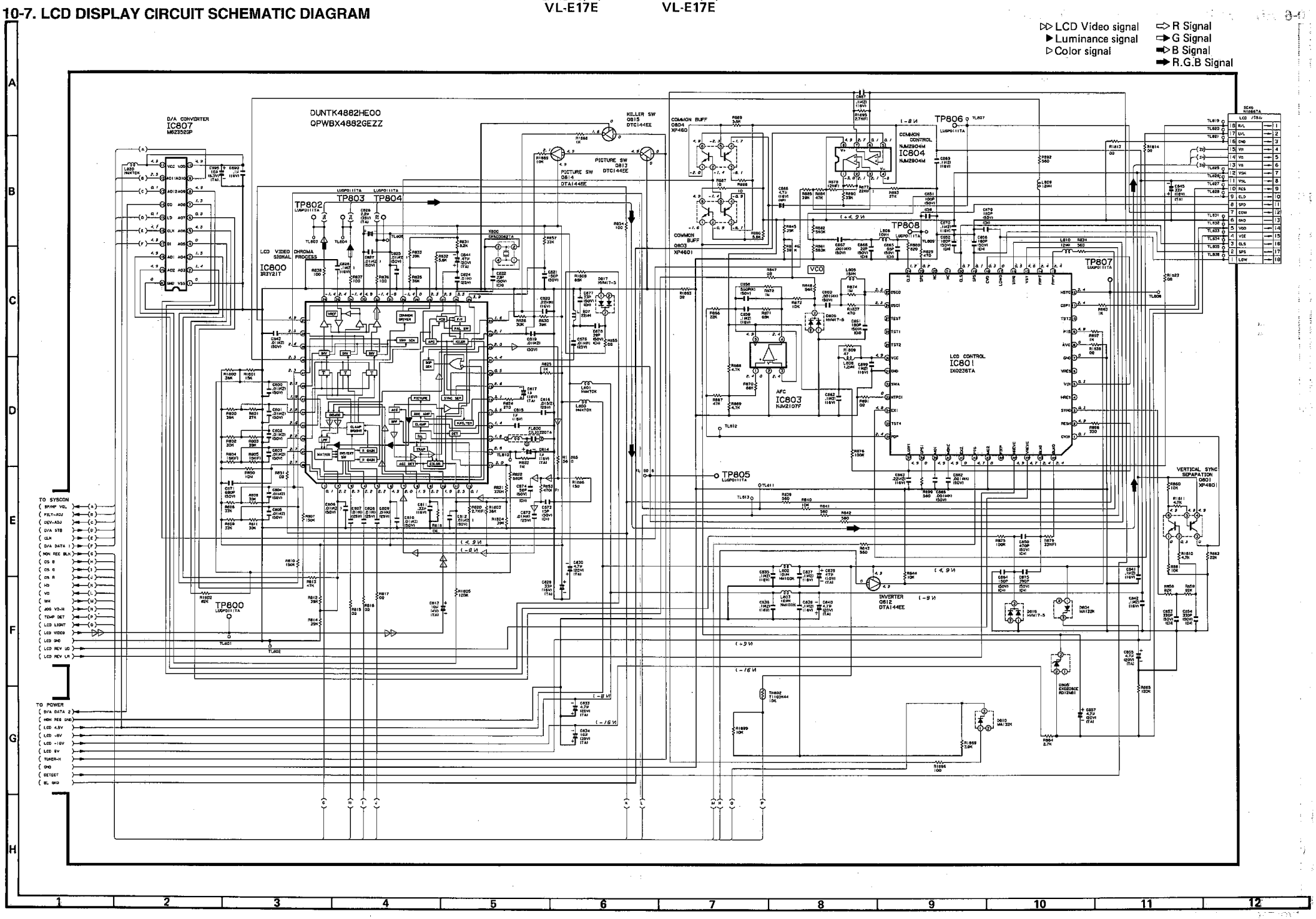
10-6. AUDIO CIRCUIT SCHEMATIC DIAGRAM



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

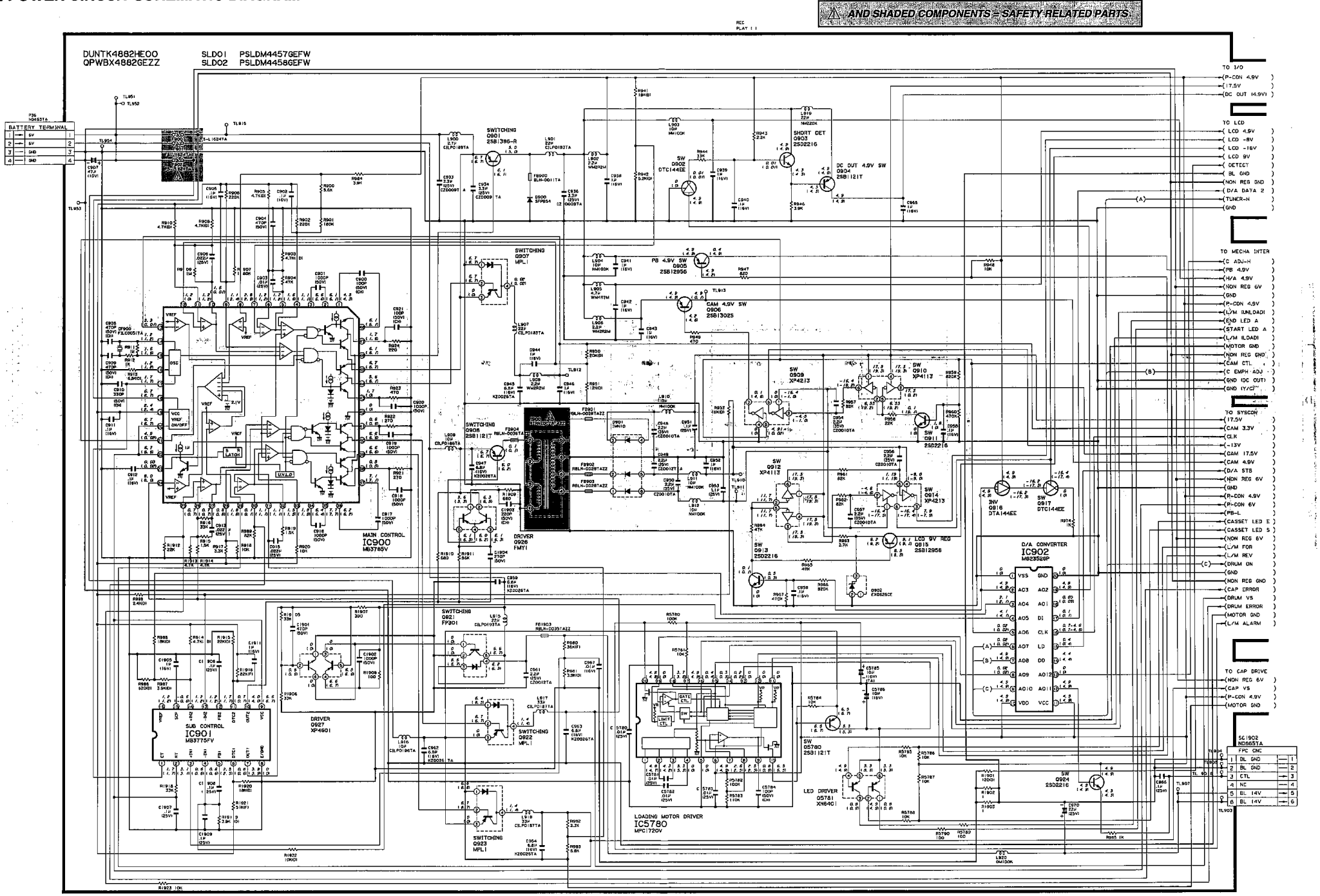
10-7. LCD DISPLAY CIRCUIT SCHEMATIC DIAGRAM



VL-E31S/H/X
VL-E17E

10-8. POWER CIRCUIT SCHEMATIC DIAGRAM

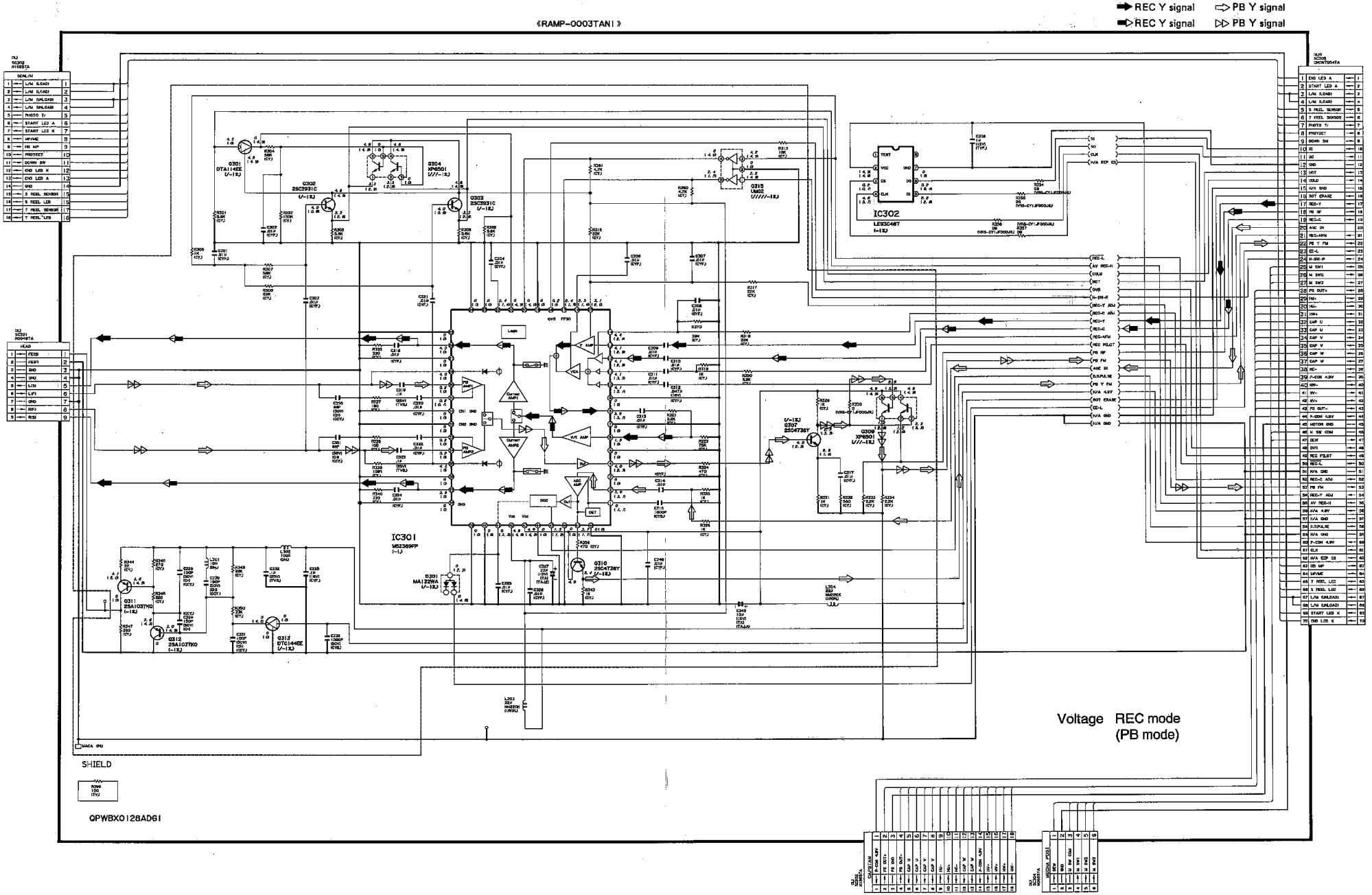
⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

10-9. HEAD AMP CIRCUIT SCHEMATIC DIAGRAM



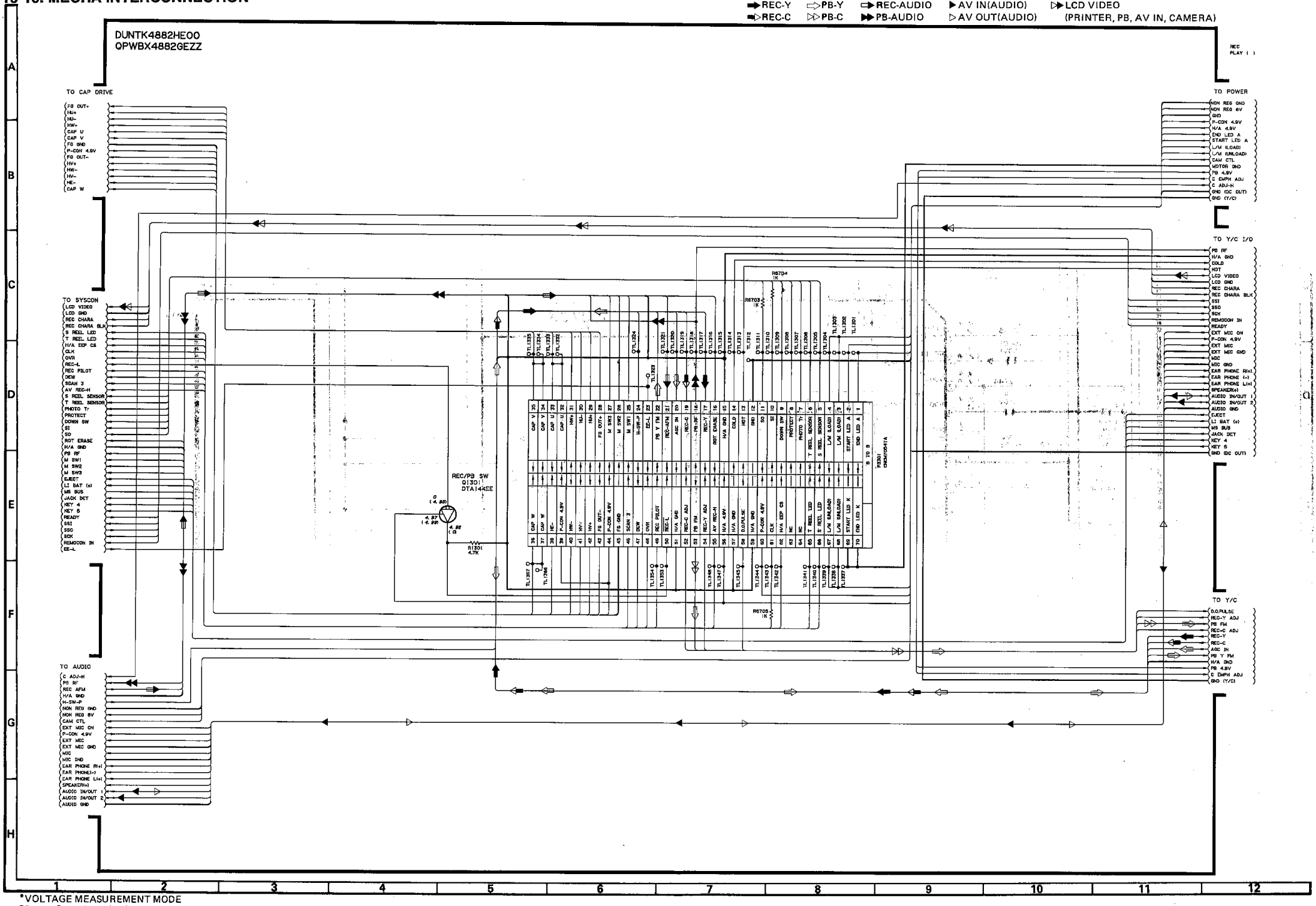
*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

10-10. MECHA INTERCONNECTION

REC-Y ▷PB-Y ▷REC-AUDIO ▶AV IN(AUDIO) ▷▷LCD VIDEO
▷REC-C ▷▷PB-C ▶▶PB-AUDIO ▷AV OUT(AUDIO) (PRINTER, PB, AV IN, CAMERA)

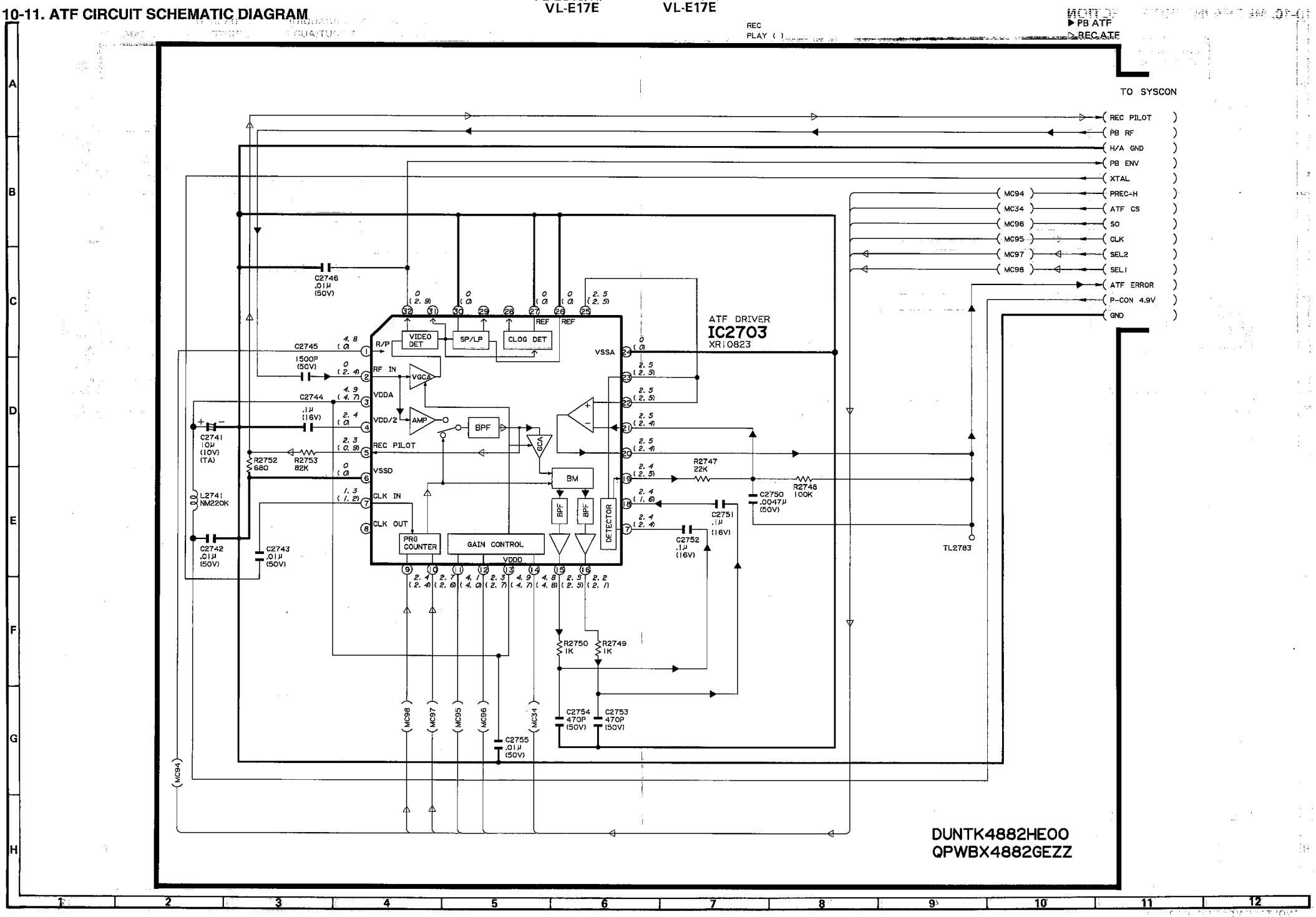
DUNTK4882HE00
QPWBX4882GEZZ



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

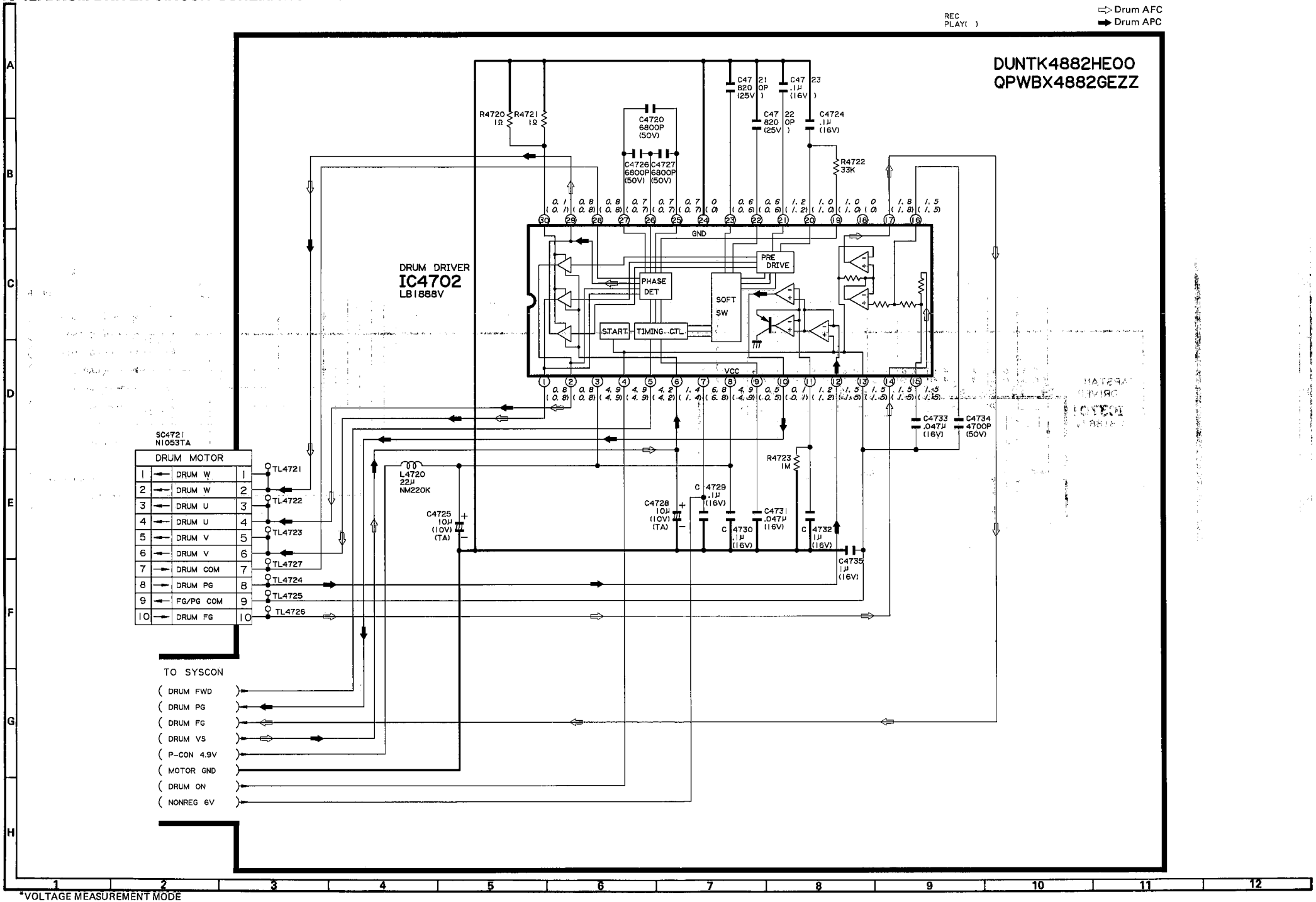
VL-E31S/H/X
VL-E17E

10-11. ATF CIRCUIT SCHEMATIC DIAGRAM



VL-E31S/H/X
VL-E17E

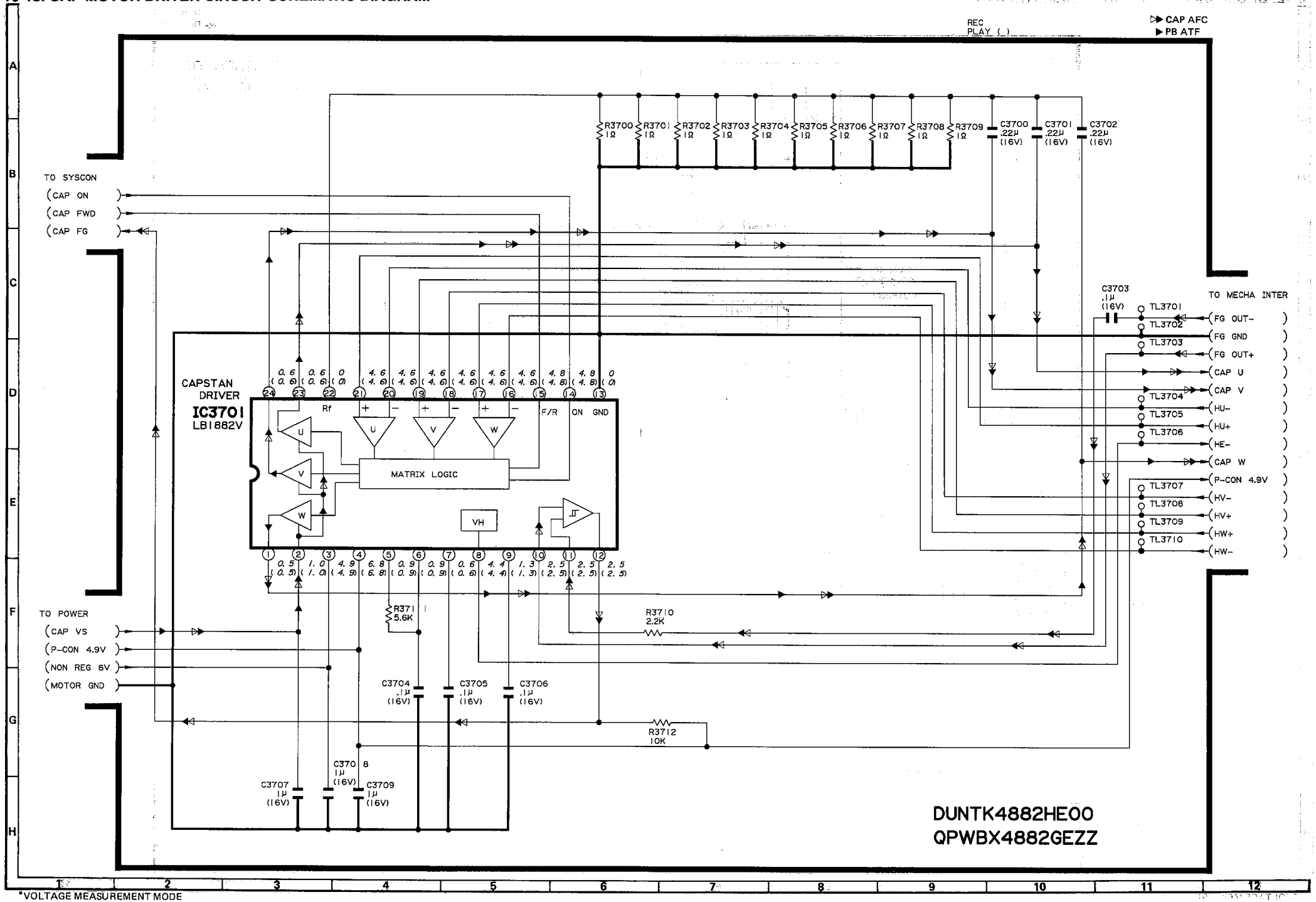
10-12. DRUM DRIVER CIRCUIT SCHEMATIC DIAGRAM



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

VL-E31S/H/X
VL-E17E

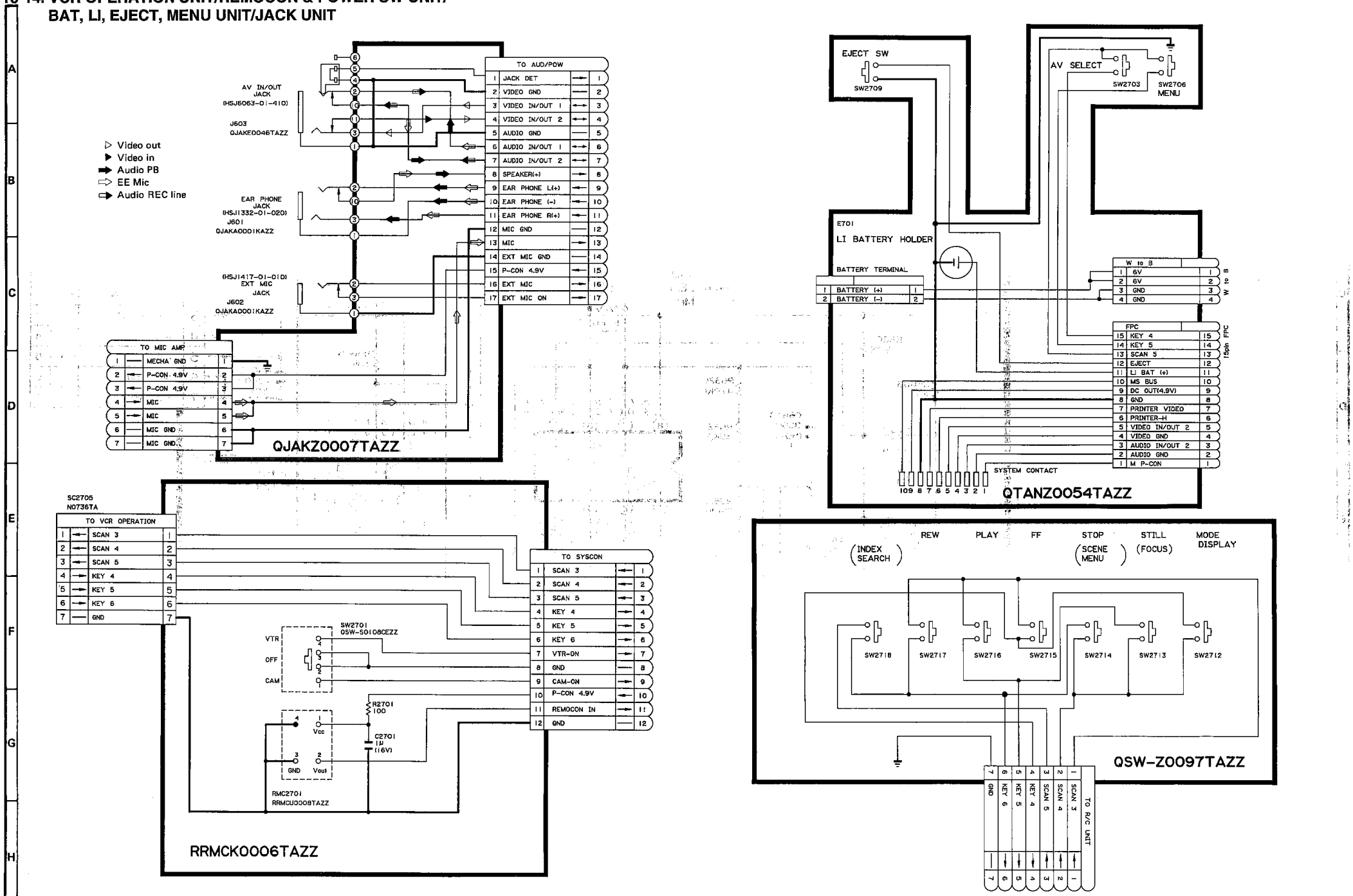
10-13. CAP MOTOR DRIVER CIRCUIT SCHEMATIC DIAGRAM



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

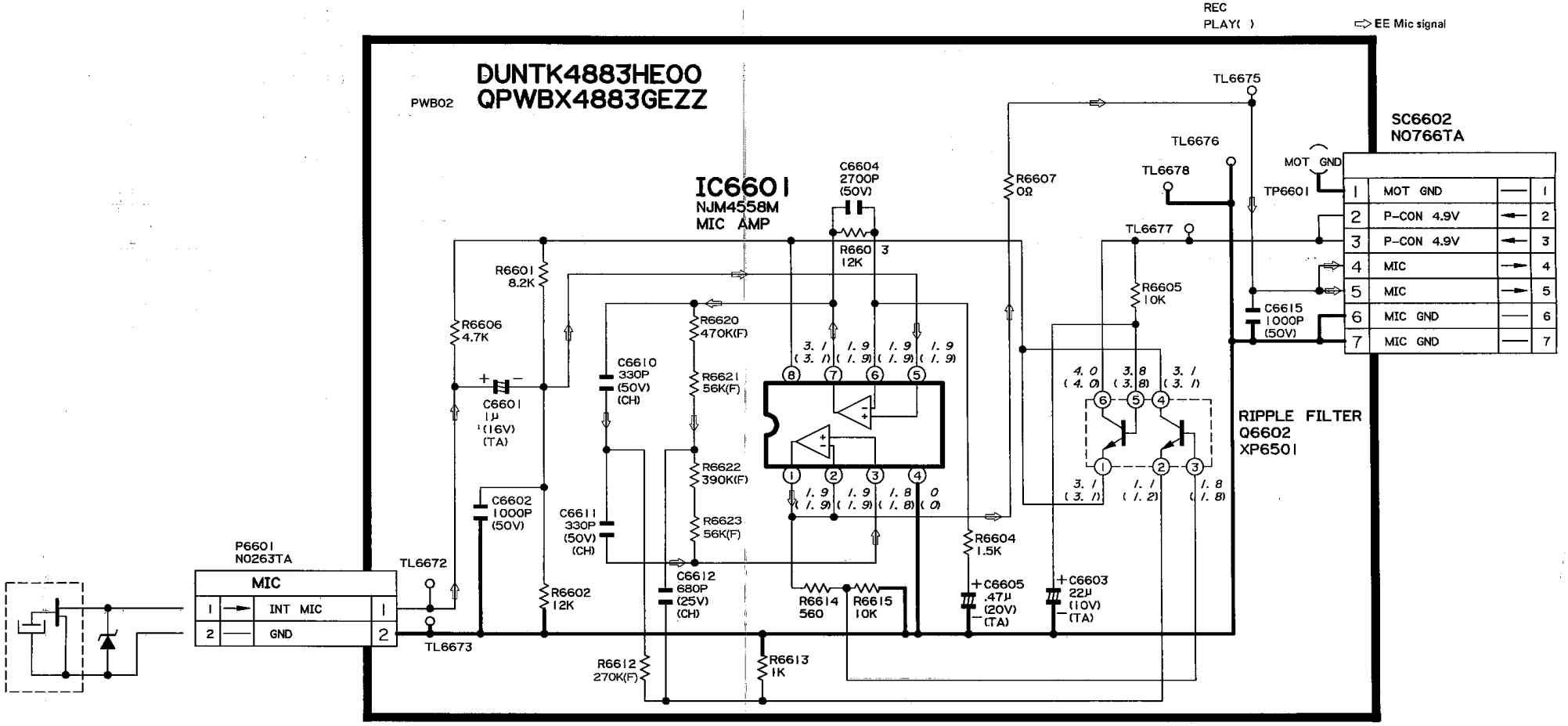
VL-E31S/H/X
VL-E17E

10-14. VCR OPERATION UNIT/REMOCON & POWER SW UNIT/ BAT, LI, EJECT, MENU UNIT/JACK UNIT



VL-E31S/H/X
VL-E17E

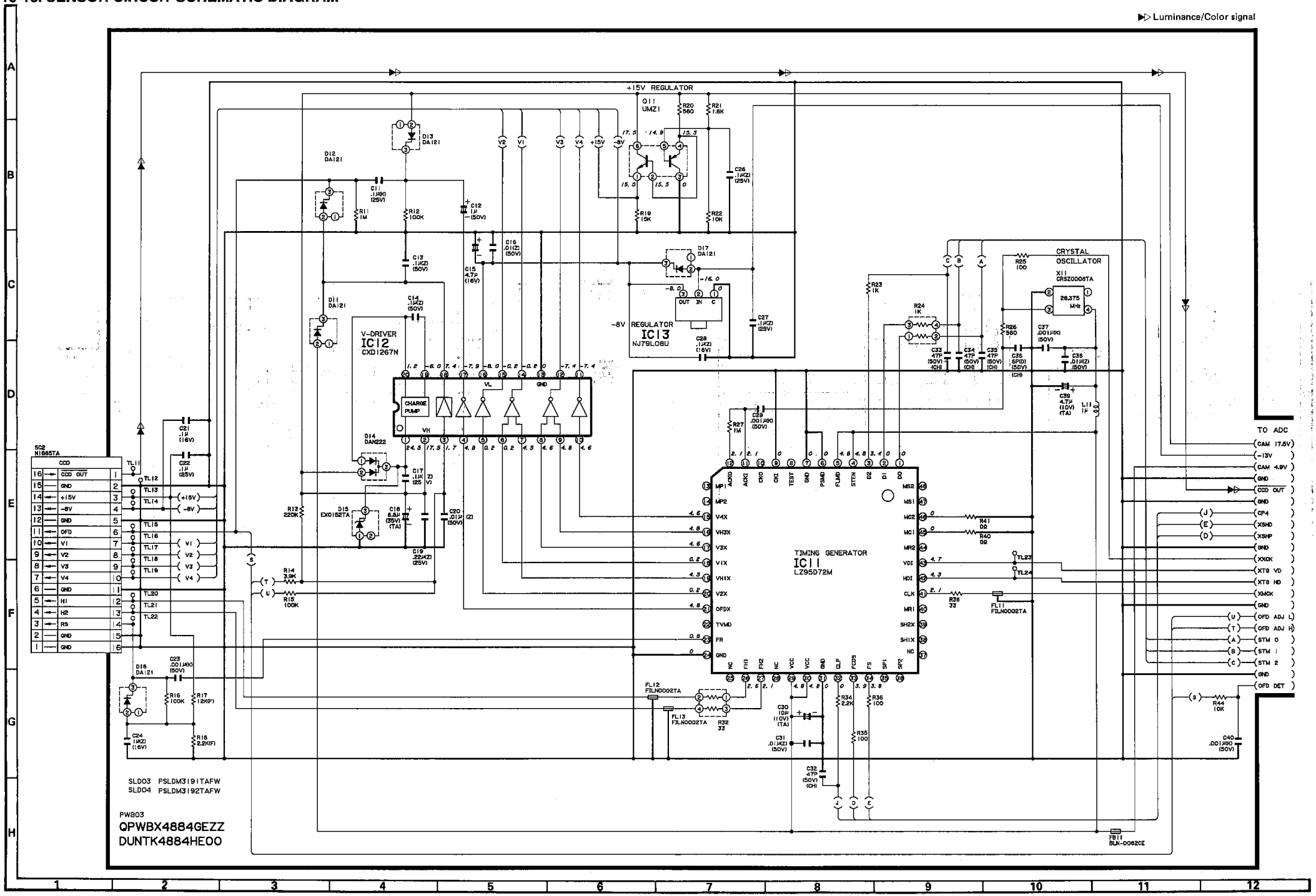
10-15. MIC AMP CIRCUIT SCHEMATIC DIAGRAM



*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

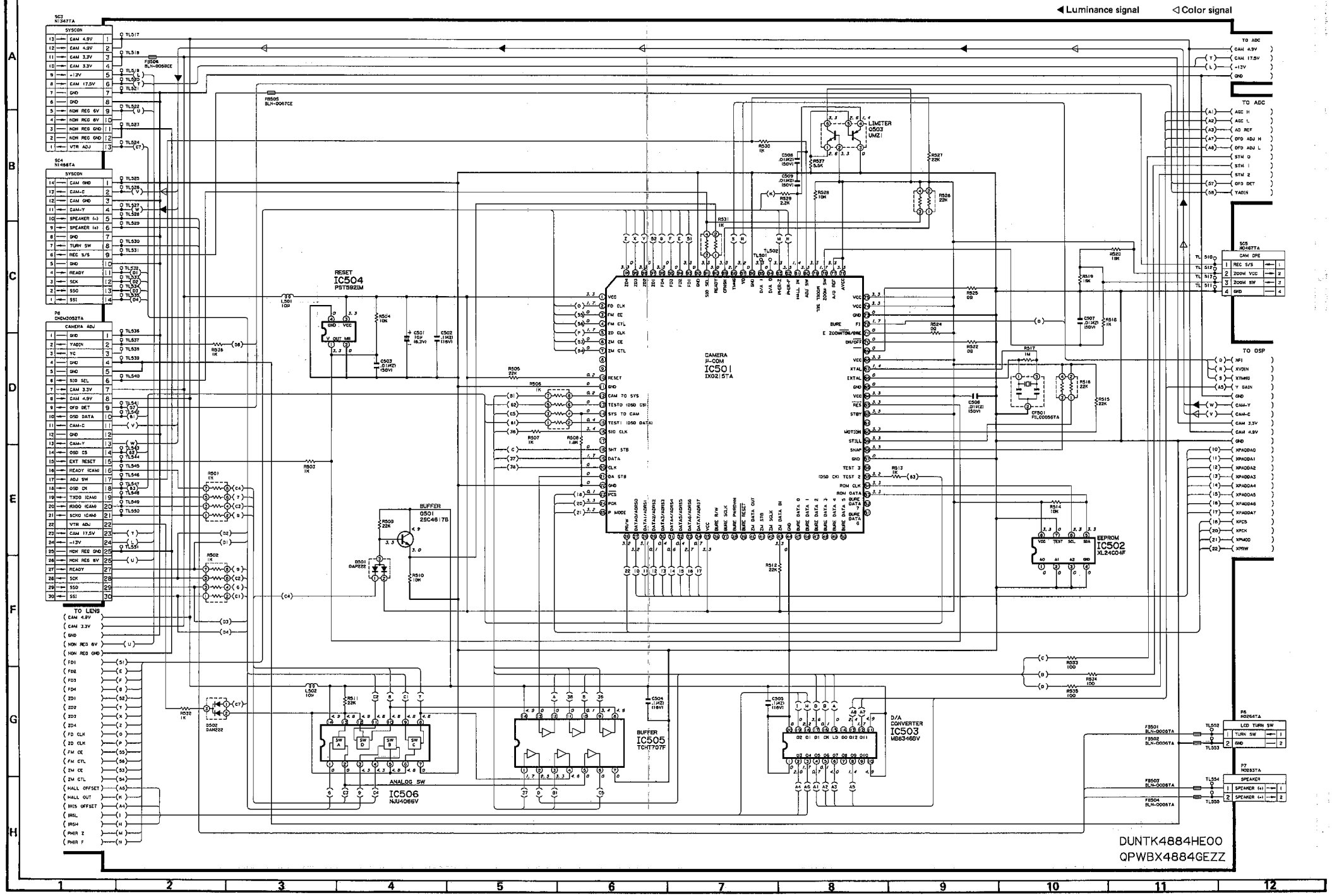
VL-E31S/H/X
VL-E17E

10-16. SENSOR CIRCUIT SCHEMATIC DIAGRAM



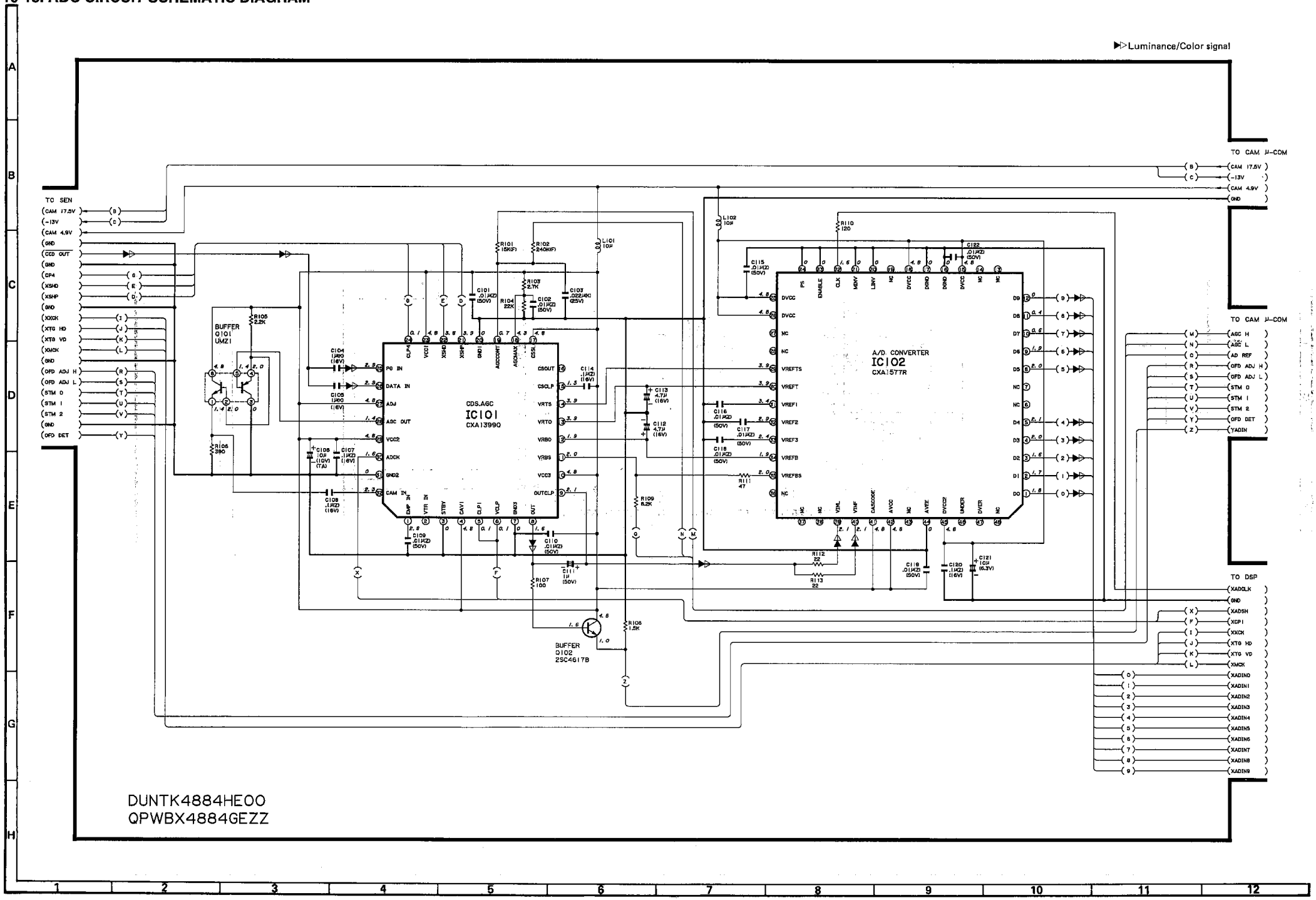
VL-E31S/H/X
VL-E17E

10-17. CAM μ-COM CIRCUIT SCHEMATIC DIAGRAM



VL-E31S/H/X
VL-E17E

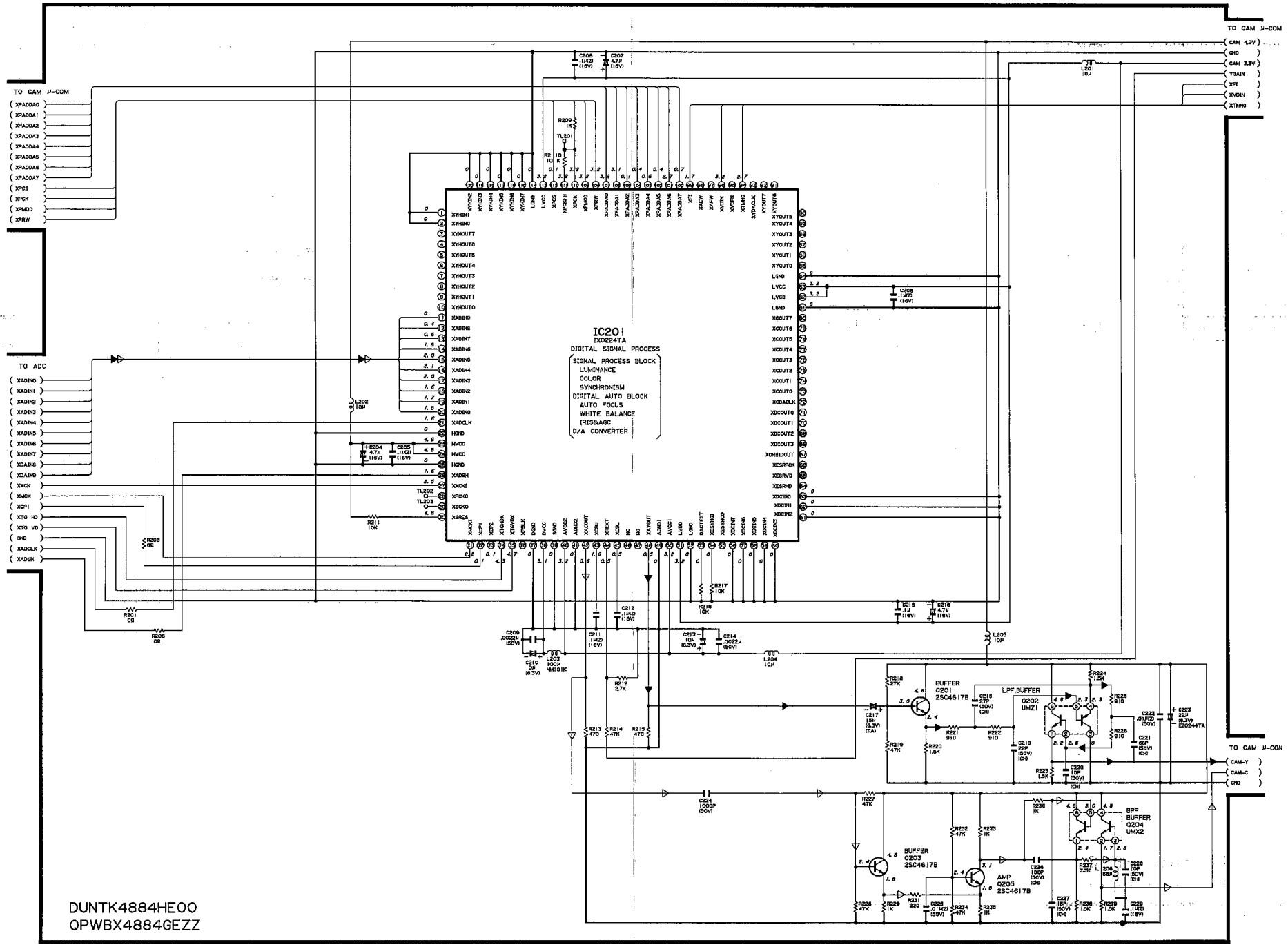
10-18. ADC CIRCUIT SCHEMATIC DIAGRAM



VL-E31S/H/X
VL-E17E

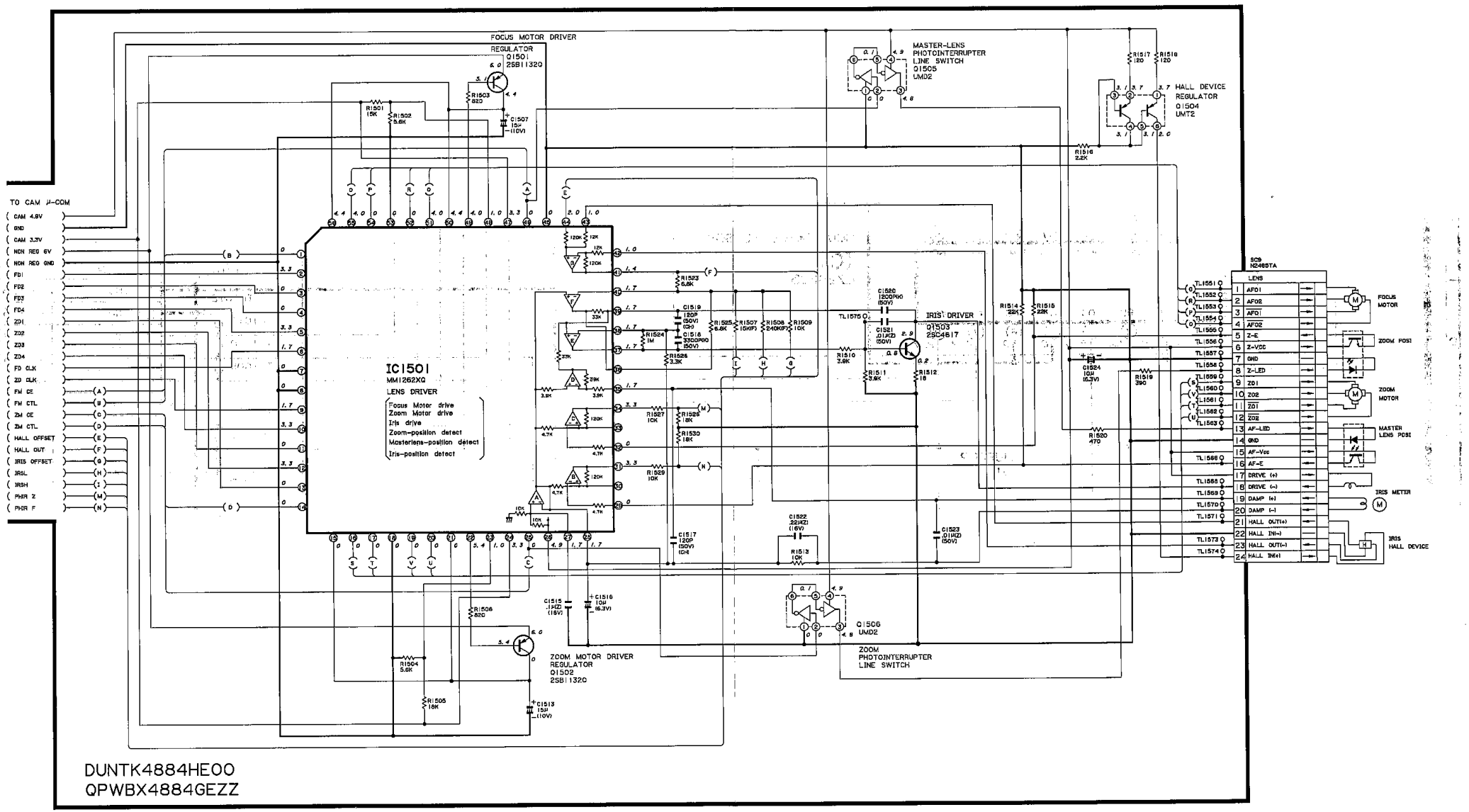
10-19. DSP CIRCUIT SCHEMATIC DIAGRAM

▶▷Luminance/Color signal ▶Luminance signal ▷Color signal



VL-E31S/H/X
VL-E17E

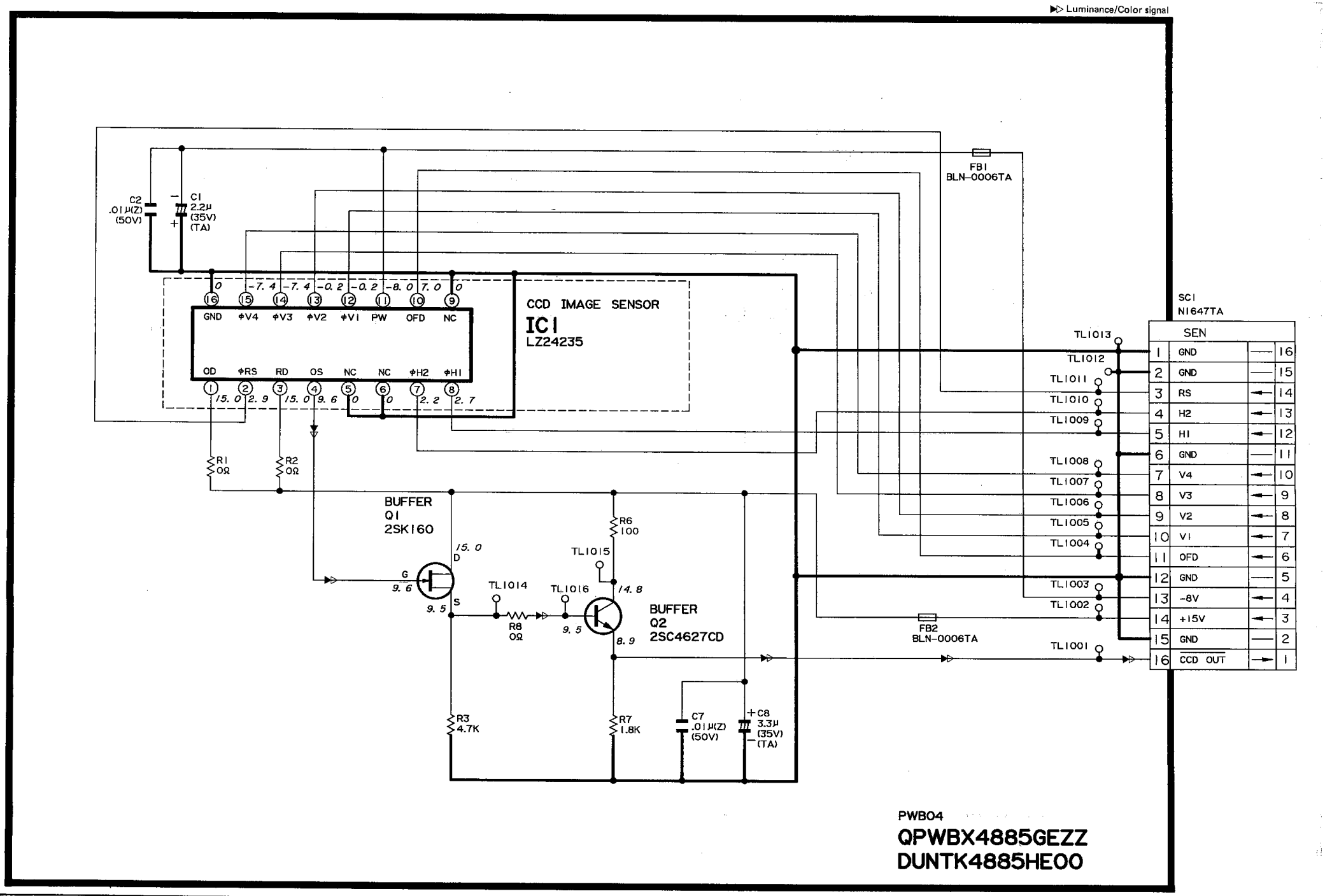
10-20. LENS DRIVE CIRCUIT SCHEMATIC DIAGRAM



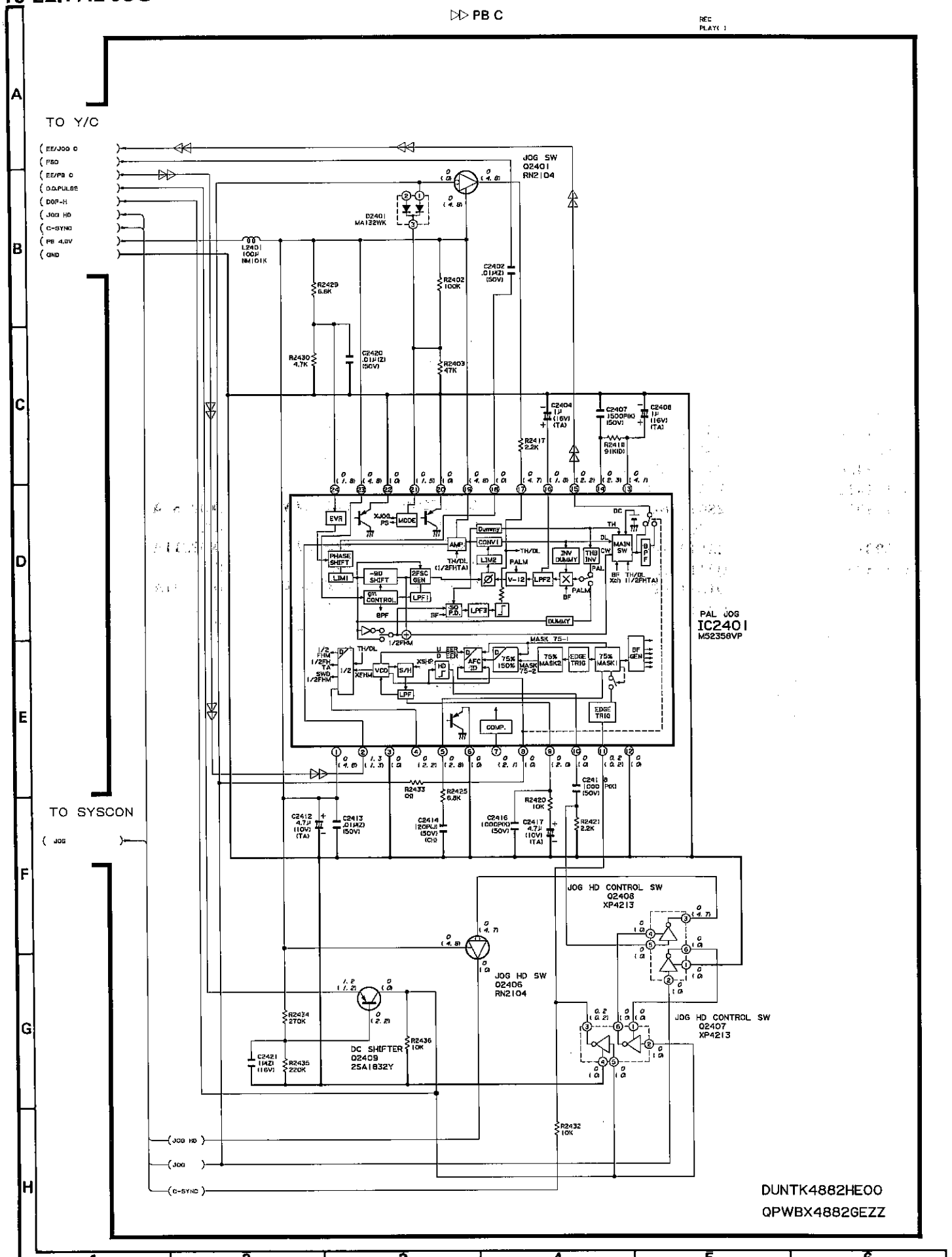
DUNTK4884HE00
QPWBX4884GEZZ

VL-E31S/H/X
VL-E17E

10-21. CCD CIRCUIT SCHEMATIC DIAGRAM

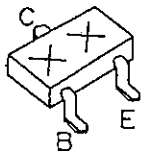


10-22. PAL JOG



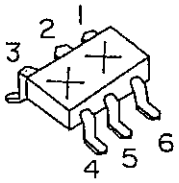
*VOLTAGE MEASUREMENT MODE
PB . . . .Parentheses ( )
REC . . .Without parentheses

11. SEMICONDUCTOR LEAD IDENTIFICATION



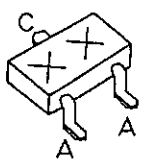
2SA1298Y
Q1603
2SA1774F
Q502
2SA1832Y
Q415, 2409
2SB12956
Q502
2SC4555
Q501, 1503
2SC4738Y
Q402, 409
420, 435
1405, 1407
1408, 2601
3403, 3404
3601, 1411
1404, 307
310
2SC3931C
Q302, 303

2SD2216
Q102, 201, 203
903, 911, 913
924, 205
DTA144EE
Q812, 814, 916
1301
DTC144EE
Q707, 813, 815
902, 917, 313
DTC323
Q603
RN1102
Q3406
RN2104
Q401, 403, 6401
2401, 2406
2SD1328-S
Q6402
2SA1037KQ
Q311, 312
DTA114EE
Q301

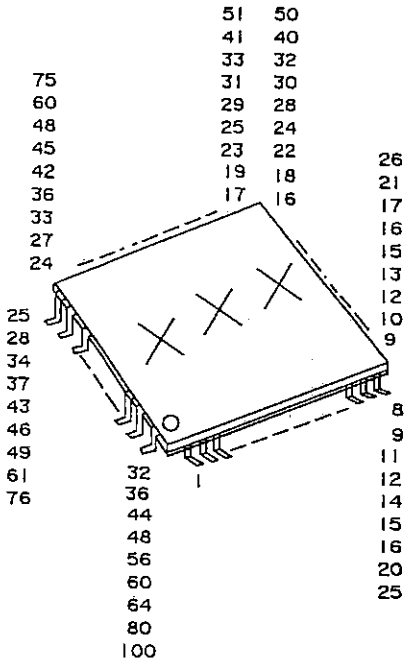


UMD2
Q432, 434
UMT2
Q1504
UMX2
Q204
UMZ1
Q11, 101, 202
XP4111
Q706
XP4113
Q910, 912

XP4213
Q909, 914, 2407
2408
XP4601
Q412, 416, 801
803, 804, 927
3405
XP6501
Q417, 708, 1409
3401, 3402, 6602
1412, 304, 309
UMH2
Q701, 702, 703
704, 705, 6700
6701



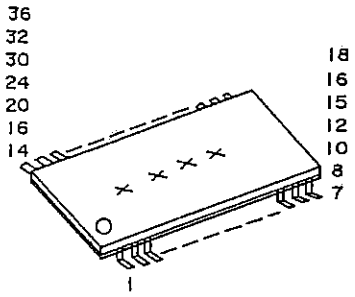
DAN222
D14
HVM17-5
D806, 816
1406, 817
MA132WK
D402, 604
704, 2401



CXA1700R
IC401
CXA1399Q
IC101
CXA1577R
IC102
IR3Y21T
IC800
IX0236TA
IC801

LA7454W
IC602
LZ95D72
IC11
MB3785V
IC900
XR10823
IC2703

IX0215TA
IC501
IX0221TA
IC701
IX0224TA
IC201
MM1262
IC1501

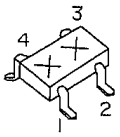


IX0238TA
IC705
LB1882V
IC3701
M52358VP
IC2401
M62352GP
IC807, 902
5401

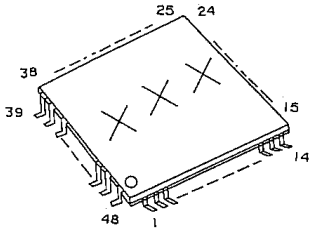
MB3775FV
IC901
MB8346BV
IC503
MPC1720V
IC5780
NJM2285V
IC6402, 6403
TCHT707F
IC505

CXD1267N
IC12
LB1888V
IC4702
NJU4066V
IC506
TL8851F
IC1404

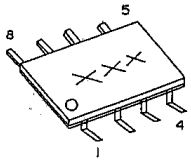
VL-E31S/H/X
VL-E17E



PST592IM
IC504



M52369FP
IC301

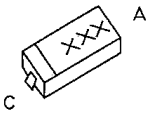


BA7655AF
IC403, 3401
LE93C46T
IC704,302
NJM2509V
IC6401

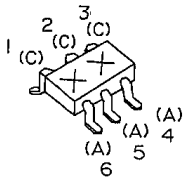
NJM4558M
IC6601
NJM2904M
IC706, 804
2601
S8420AF
IC702

TDA7052A
IC1601
NJM2233V
IC604
XL24C04F
IC502

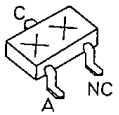
NJ79L08U
IC13



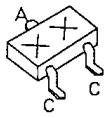
SFPB54
D900



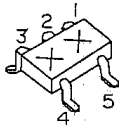
FC903
D701, 702
IMN10
D901



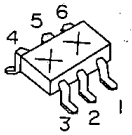
EX0226CE
D805
EX0626CE
D902
DA121
D11, 12, 13, 16, 17
MA132K
D603, 703, 804
810, 3601
EX0152TA
D15



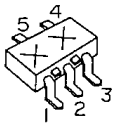
DAP222
D501
MA132WA
D401, 705
301



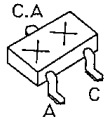
UMG2
Q1602, 1604
2602, 315
XP1501
Q433, 606
NJM2107F
IC803
SC14S66F
IC603
SC7S08F
IC703



RN4604
Q604, 2603
XN4402
Q1601
XN4504
Q404
XN6401
Q5781

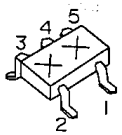


FP301
Q921

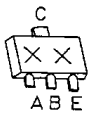


MA133
D1405, 6401
6402, 6403
6407
MA147
D3401

2SB1121T
Q904, 908
5780
2SB1132Q
Q1501, 1502
2SB1302S
Q906
2SB1386
Q901



FMY1
Q926

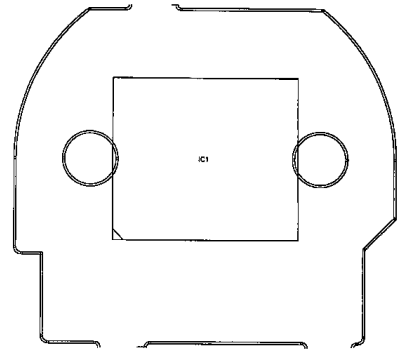


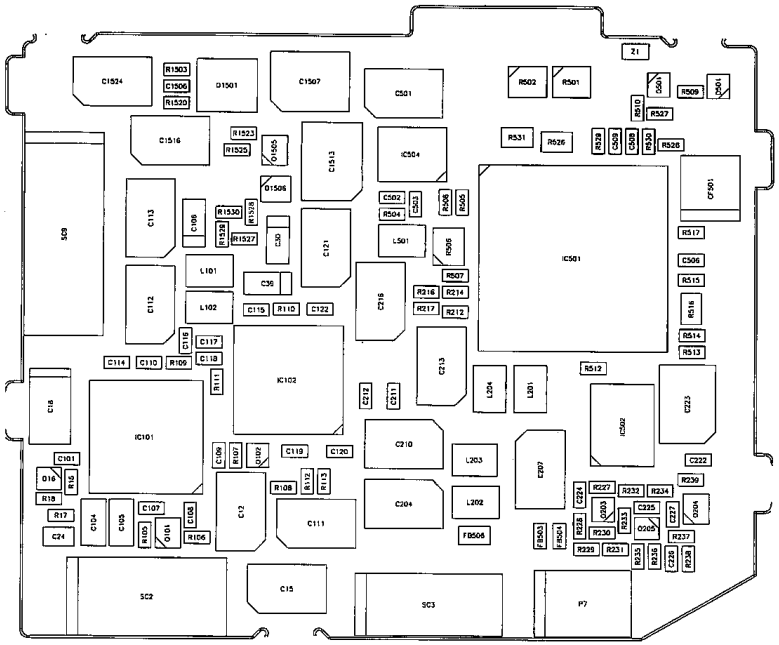
MPL1
Q907, Q922
Q923

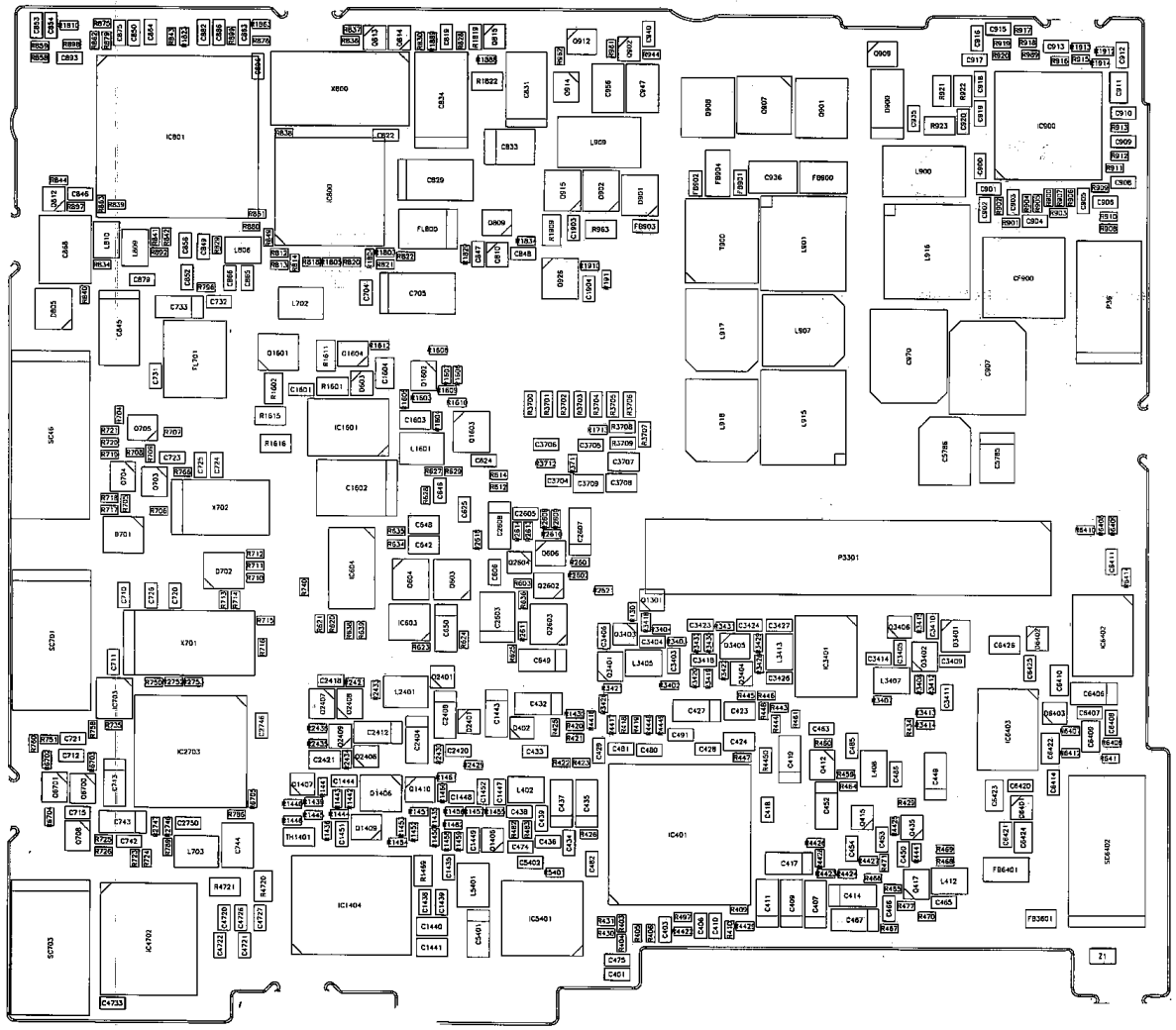
VL-E31S/H/X
VL-E17E

12-1. PRINTED CIRCUIT BOARDS

Parts Surface



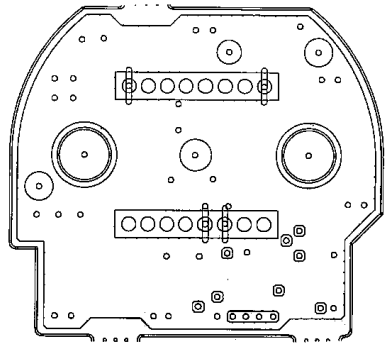


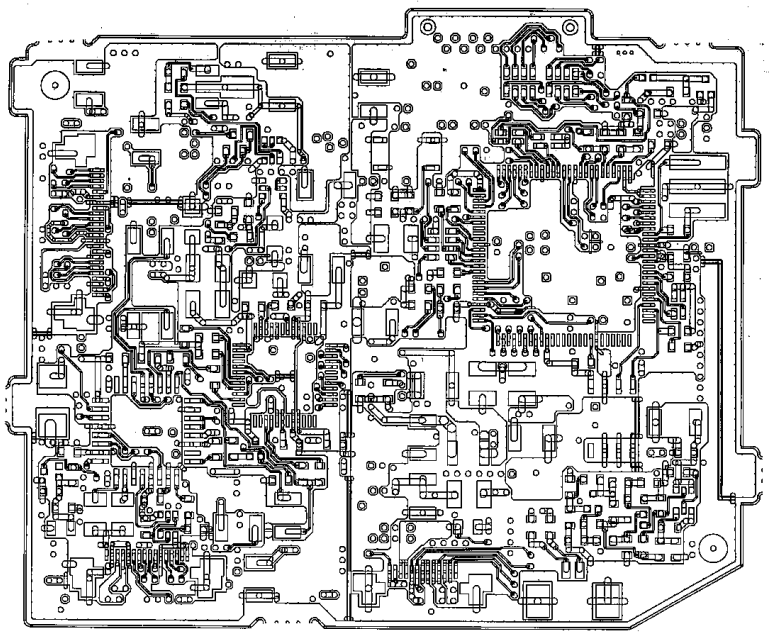


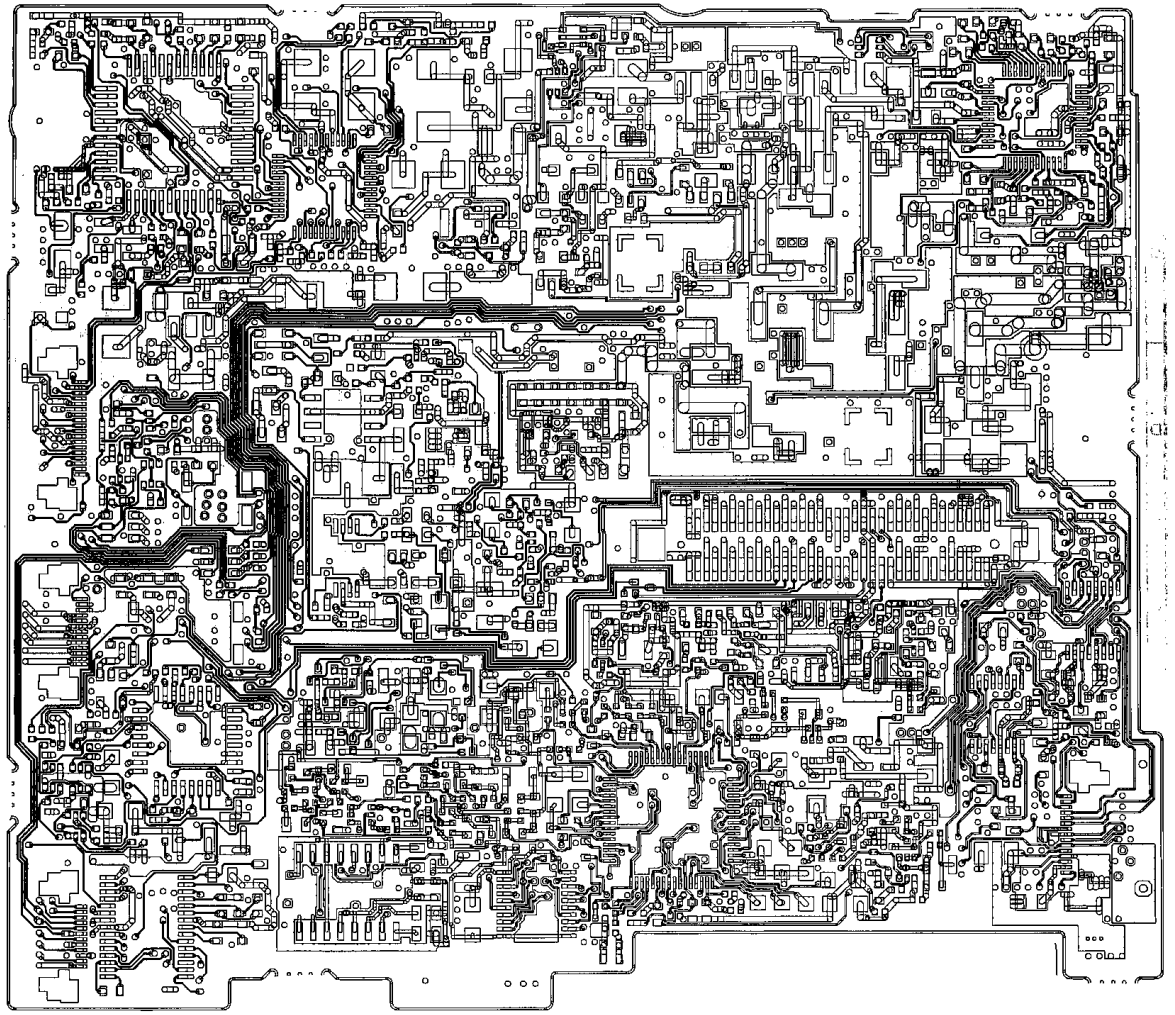
VL-E31S/H/X
VL-E17E

12-2. PRINTED CIRCUIT BOARDS

Soldering Surface



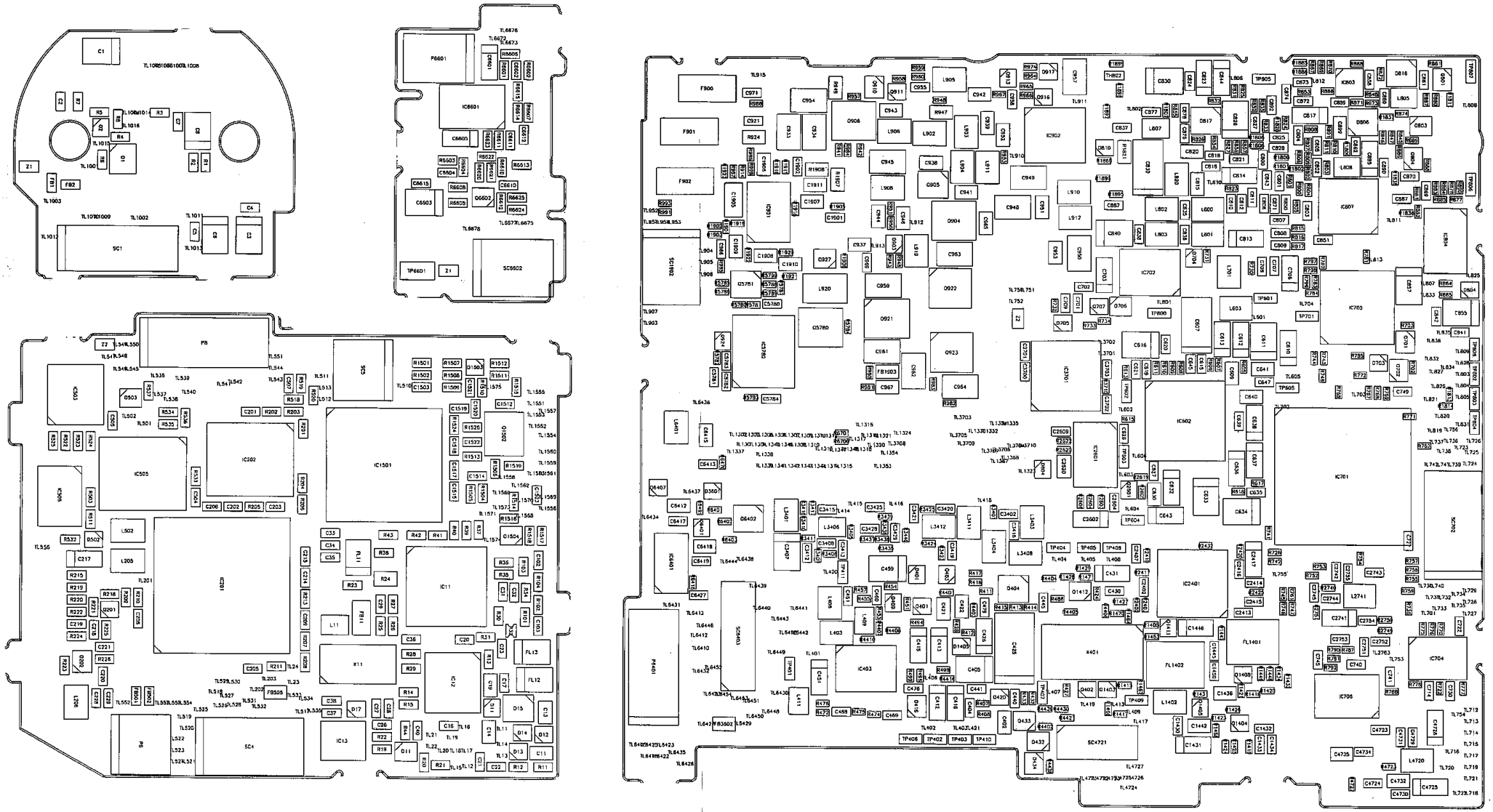




VL-E31S/H/X
VL-E17E

12-3. PRINTED CIRCUIT BOARDS

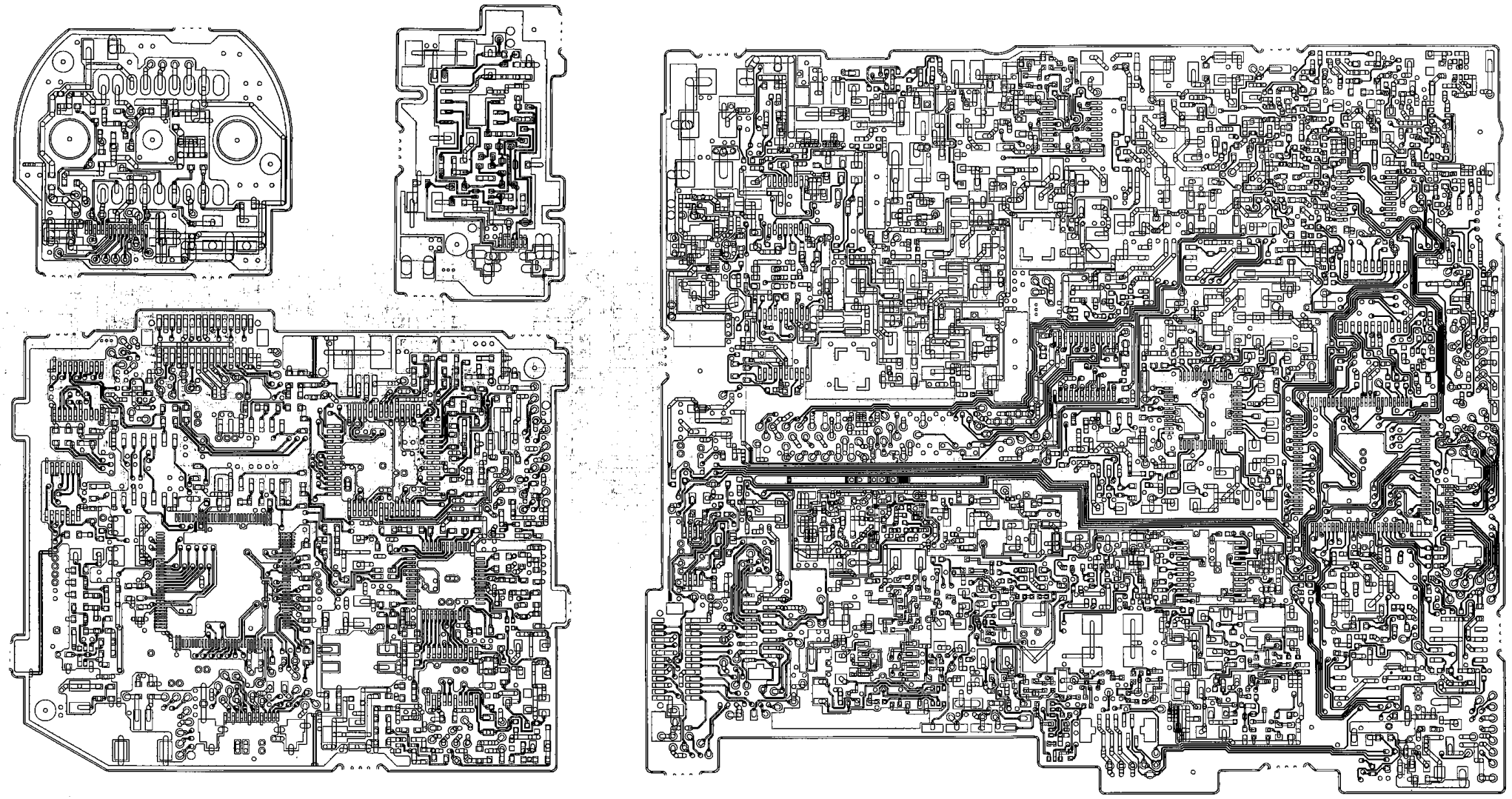
Parts Surface

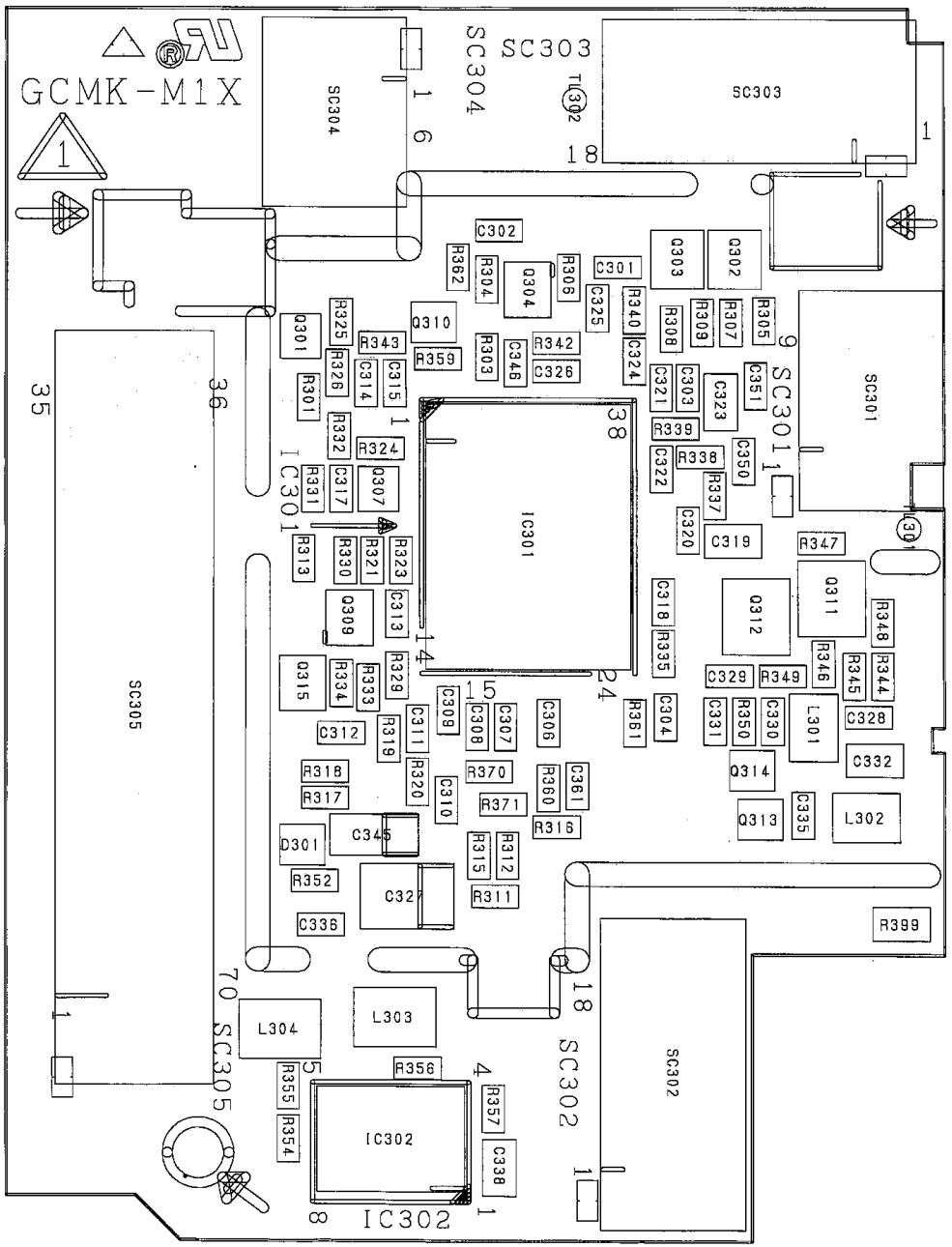


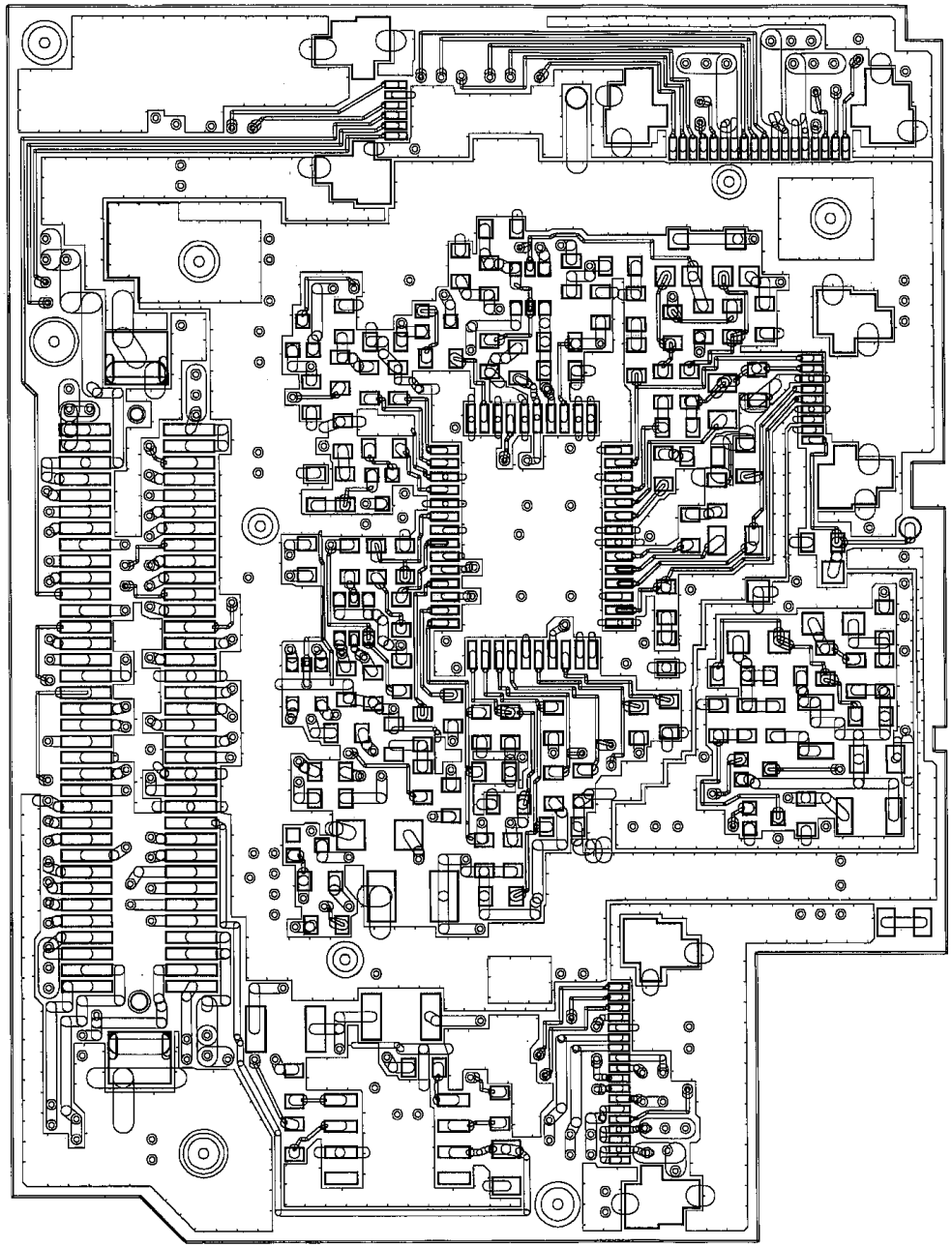
VL-E31S/H/X
VL-E17E

12-4. PRINTED CIRCUIT BOARDS

Soldering Surface

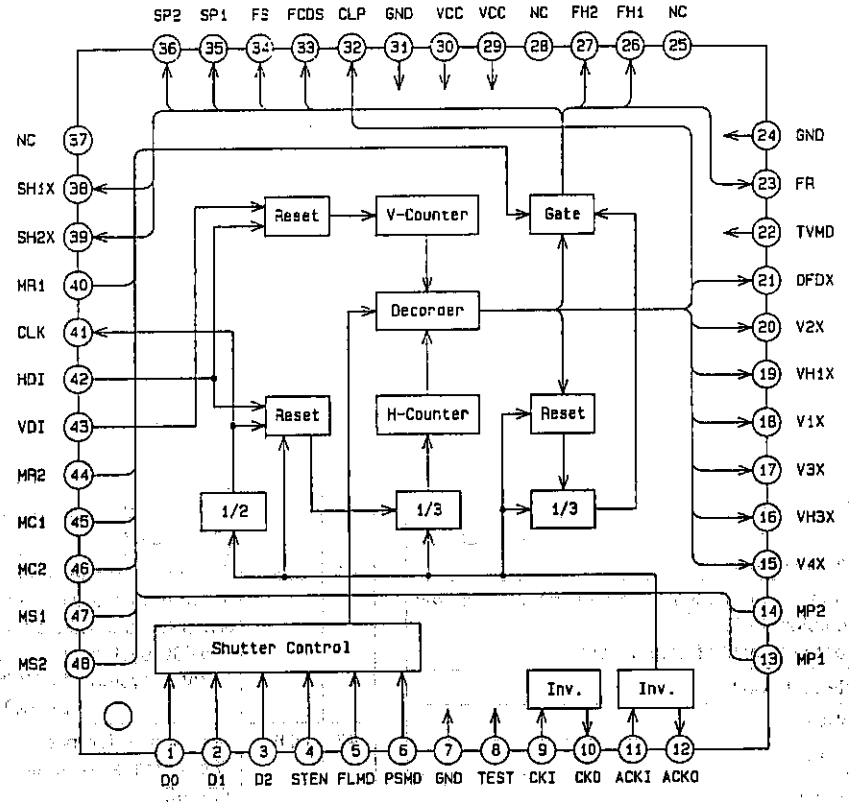



GCMK-M1X
SC303
SC304
SC301
SC305
SC302
IC301
IC302
L304
L303
L301
L302



13. FUNCTION TABLE OF IC

- **IC11 (LZ95D72M)**
  TIMING GENERATOR



FUNCTIONS OF PINS

Pin No.	Signal name	Function
1	D0	Electronic shutter speed control input terminal.
2	D1	
3	D2	
4	STEN	Shutter mode setting input terminal H level: Shutter mode L level : Normal mode 1/60 sec (NTSC), 1/50 sec (PAL)
5	FLMD	Flickerless shutter mode setting input terminal.
6	PSMD	Input terminal to select the electronic shutter speed setting data input. H level: Parallel data input mode L level: Serial data input mode
7	GND	Ground terminal.
8	TEST	Test input terminal. Usually, keep it open or set to L level.
9	CKI	Reference clock input terminal. This terminal and CKO(terminal10)compose the oscillation circuit. Since no resistor is provided, fit the feedback resistor. Oscillation frequency NTSC: 28.63636 MHz (1820 fH) PAL: 28.37500 MHz (1816 fH)
10	CKO	Inversion output terminal of CKI (terminal 9).
11	ACKI	Input terminal for reference clock duty adjustment. This terminal and ACKO (terminal 12) compose the oscillation circuit. It is internal main clock input terminal. To be connected to CKO (terminal 10) through capacitor. Provide feedback from ACKO (terminal12) through resistor.
12	ACKO	Inversion output terminal of ACKI(terminal11).

Pin No.	Signal name	Function
13 14	MP1 MP2	Input terminal to control the phase of fall of color separation sample hold pulse SP1 (terminal35) , SP2 (terminal 36) against rise of FH2 (terminal 27).
15	V4X	Pulse output terminal to drive the area sensor vertical CCD shift register No.4. To be connected to 4AX input terminal of vertical driver IC.
16	VH3X	Pulse output terminal to transfer the charge of area sensor photodiode to the vertical CCD shift register No.3. To be connected to 3BX input terminal of vertical driver IC.
17	V3X	Pulse output terminal to drive the area sensor vertical CCD shift register No.3. To be connected to the 3AX input terminal of vertical driver IC.
18	V1X	Pulse output terminal to drive the area sensor vertical CCD shift register No.1. To be connected to the 1AX input terminal of vertical driver IC.
19	VH1X	Pulse output terminal to transfer the charge of area sensor photodiode to the vertical CCD shift register No.1. To be connected to the 1BX input terminal of vertical driver IC.
20	V2X	Pulse output terminal do drive the area sensor vertical CCD shift register No.2. To be connected to the 2AX input terminal of vertical driver IC.
21	OFDX	Pulse output terminal to remove charge when the electronic shutter is operated. To be superposed on area sensor OFD voltage.In normal mode the H level is output.
22	TVMD	TV system selection input terminal. TVMD: L / H or Open TV system: NTSC / PAL

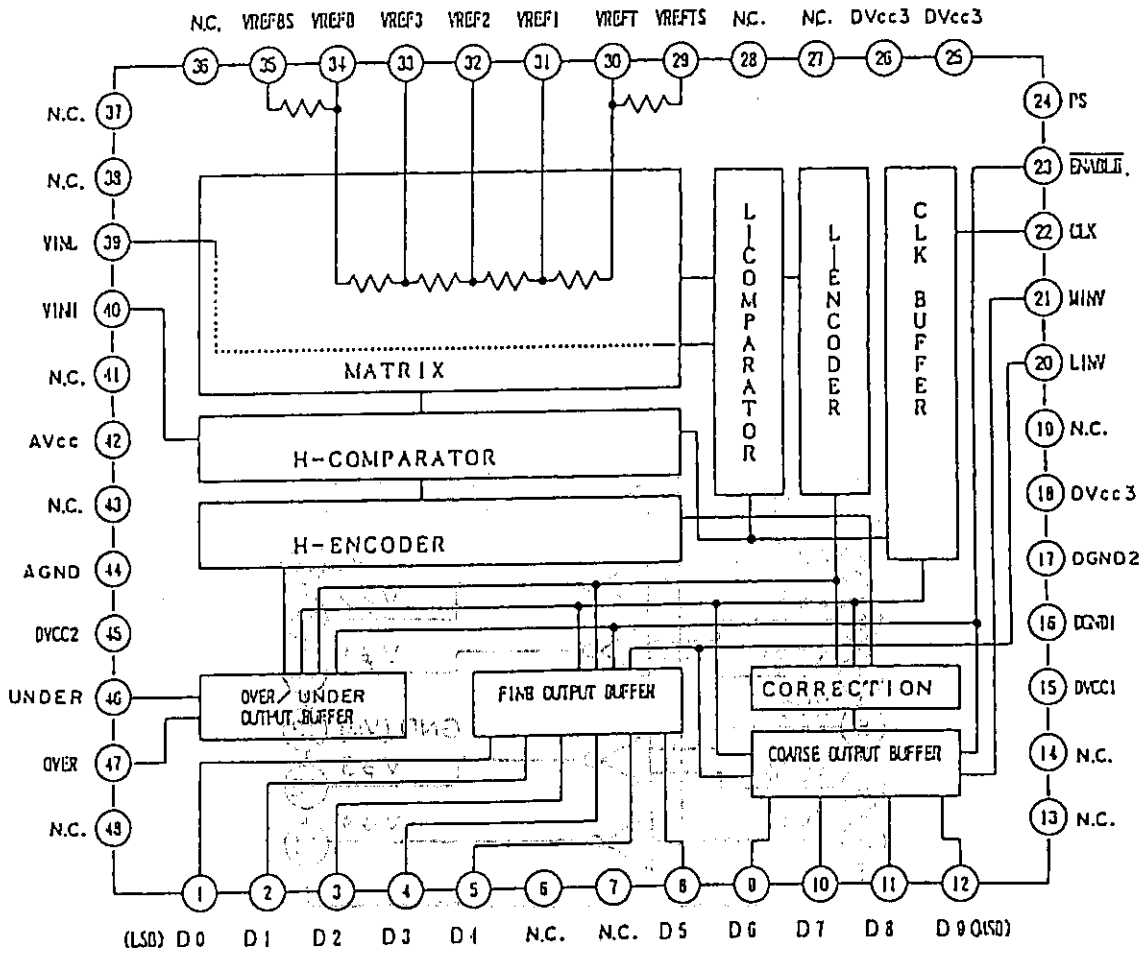
• IC11 (LZ95D72M)

FUNCTIONS OF PINS

Pin No.	Signal name	Function
23	FR	Pulse output terminal to reset the charge of area sensor output circuit. To be connected to øR of area sensor through DC offset circuit. FR rise with respect to rise of FH2 (terminal 27) is fixed (simulation value [typ.]; 0ns). The fall phase can be insignificantly changed by using MR1 (terminal 40) and MR2 (terminal 44).
24	GND	Ground terminal.
25	NC	Not connected internally.
26	FH1	Pulse output terminal for driving the area sensor's horizontal CCD shift register # 1.
27	FH2	Pulse output terminal for driving the area sensor's horizontal CCD shift register # 2.
28	NC	Not used.
29	VCC	+4.9V power supplied.
30	VCC	+4.9V power supplied.
26	FH1	Pulse output terminal to drive the area sensor horizontal CCD shift register No.1.
27	FH2	Pulse output terminal to drive the area sensor horizontal CCD shift register No.2. To be connected to øH2 of area sensor.
28	N. C	Not connected internally.
29	VCC	+5V is supplied
30	VCC	+5V is supplied
31	GND	Ground terminal.
32	CLP	Clamp pulse output terminal to clamp the area sensor dummy output. Horizontal period continuous pulse.
33	FCDS	Clamp pulse output terminal to clamp the area sensor output signal at high speed. The fall phase with respect to FH2 (terminal 27) fall is fixed. The rise phase can be insignificantly changed by using MC1 (terminal 45) and MC2 (terminal 46).
34	FS	Pulse output terminal for sample holding of area sensor output signal. The fall phase with respect toFH2(terminal 27)is fixed. The rise phase can be insignificantly changed by using MS1(terminal 47)and MS2(terminal 48).

Pin No.	Signal name	Function
35	SP1	Sample hold pulse output terminal for color separation of area sensor output single. The pulse width is fixed. The fall phase with respect to rise of FH2 (terminal 27) can be insignificantly changed by using MP1 (terminal 13) and MP2 (terminal 14).
36	SP2	Sample hold pulse output terminal for color separation of area sensor output signal. The pulse width is fixed. The fall phase with respect to rise of FH2 (terminal 27) can be insignificantly changed by using MP1 (terminal 13) and MP2 (terminal 14).
37	N. C.	Not connected internally.
38	SH1X	Pulse output terminal for sample holding.
39	SH2X	Pulse output terminal for sample holding SH1X (terminal 38) reverse porailty pulse.
40	MR1	Input terminal to control the fall phase of FR (terminal 23) with respect to FH2 (terminal 27) rise. The pulse width can be changed insignificantly. It is used together with MR2 (terminal 44).
41	CLK	Continuous pulse output terminal (reference clock frequency of ACKI (terminal 11) is divided by 2). Synchronizing with fall of ACKI (terminal 11). NTSC system: 14.31818 MHz, 910 fH PAL system: 14.18750 MHz, 908 fH (fH: 1 horizontal period)
42	HDI	Horizontal reference single input terminal for timing IC The negative horizontal reference pulse is supplied from SSG-IC.
43	VDI	Vertical reference signal input terminal of timing IC. Negative vertical reference pulse is supplied from SSG-IC.
44	MR2	Input terminal to control the phase difference of fall of reset pulse FR (terminal 23) of area sensor with respect to FH2 (terminal 27). The pulse width can be changed insignificantly. To be used together with MR1(terminal 40).
45 46	MC1 MC2	Input terminal to control the phase of rise of FCDS pulse (terminal) with respect to fall of FH2 (terminal 27). The pulse width can be changed insignificantly.
47 48	MS1 MS2	Input terminal to control the phase of rise of FS (terminal 34) with respect to rise of FH2 (terminal 27). The pulse width can be changed insignificantly.

• IC102 (CXA1577R)
BLOCK DIAGRAM



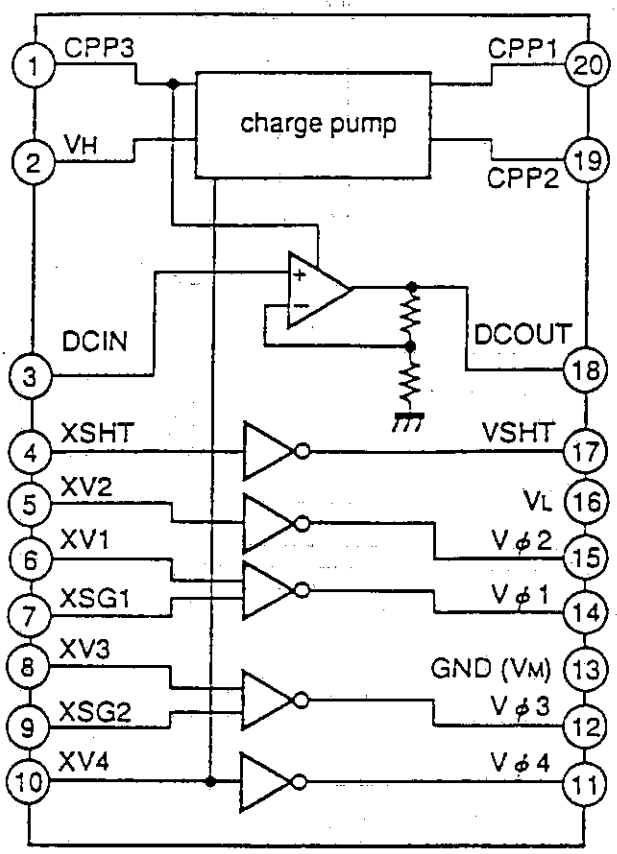
FUNCTIONS OF PINS

Pin No.	Signal name	Function
1~5 8~12	D0 to D9	Digital output terminal DO (LSB) to D9 (MSB)
46	UNDER	Underflow output terminal
47	OVER	Overflow output terminal
15 45	DVcc1 DVcc2	Digital power supply
16	DGND1	Digital ground
18,25,26	DVcc3	Digital power supply
17	DGND2	Digital ground
44	AGND	Analog ground
20	LINV	This input terminal can invert output from D0 (LSB) to D8. In OPEN state this terminal gives H level input. (Details are shown in the output format table.)
21	MINV	This input terminal can invert output form D9 (MSB). In OPEN state this terminal gives H level input. (Details are shown in the output format table.)
23	ENABLE	3-state control terminal. When L level input is given, it is enabled. In OPEN state this terminal gives H level input.

Pin No.	Signal name	Function
24	PS	Power save input terminal. When "H" level is input power save state is set. When this terminal is in open state, "H" level is input.
22	CLK	Clock input terminal
29	VREFTS	Reference high-voltage sense terminal(TOP)
30	VREFT	Reference voltage force terminal (TOP)
31~33	VREF1~3	
34	VREFB	Reference voltage force terminal (BOTTOM)
35	VREFBS	Reference voltage sensor terminal (BOTTOM)
39	VINL	Analog input terminal (low-order comparator input terminal)
40	VINH	Analog input terminal(high-order comparator input terminal)
42	AVcc	Analog power supply
6,7,13 14,19 27,48	N.C.	Empty terminal.These terminals are not connected to the internal circuit.It is recommended to connect to DGND(digital ground).
28,36 37,38 41,43	N.C.	Empty terminal.These terminals are not connected to the internal circuit.It is recommended to connect to AGND(analog ground).

• **IC12 (CXD1267N)**

BLOCK DIAGRAM AND PIN ARRANGEMENT

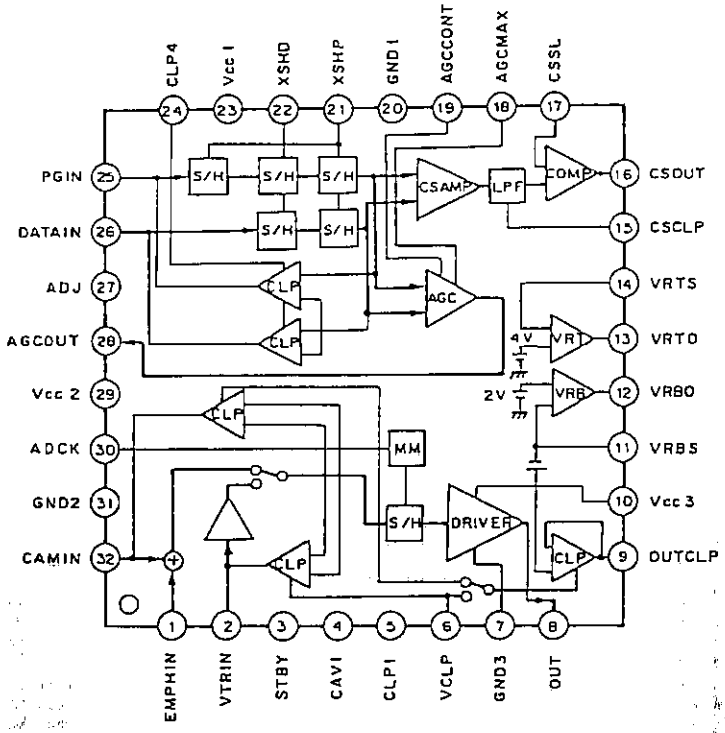


FUNCTION OF PINS

Pin No.	Signal name	Function
1	CPP3	Charge pump terminal
2	VH	Power supply (15V)
3	DCIN	Op. amp. input
4	XSHT	Output control (VSHT)
5	XV2	Output control (Vø2)
6	XV1	Output control (Vø1)
7	XSG1	Output control (Vø1)
8	XV3	Output control (Vø3)
9	XSG2	Output control (Vø3)
10	XV4	Output control (Vø4)

Pin No.	Signal name	Function
11	Vø4	High voltage output (2 levels;VM,VL)
12	Vø3	High voltage output (3 levels;VH,VM,VL)
13	VM	GND
14	Vø1	High voltage output (3 levels;VH,VM,VL)
15	Vø2	High voltage output (2 levels;VM,VL)
16	VL	Power supply (-8.5V)
17	VSHT	High voltage output (2 levels;VH,VL)
18	DCOUT	Op. amp. output
19	CPP2	Charge pump terminal
20	CPP1	Charge pump terminal

- **IC101 (CXA1399Q)**
  BLOCK DIAGRAM

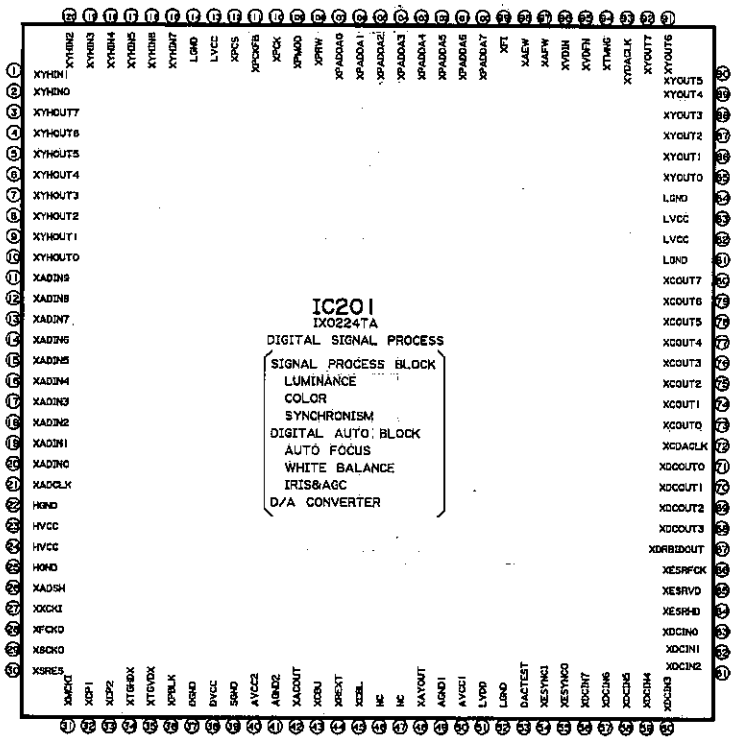


FUNCTIONS OF PINS

Pin No.	Signal name	Function
1	EMPH IN	AGC OUT (pin 28) output signal is passed externally through the band pass filter (passing only chroma component), and its signal is input from this terminal.
2	VTR IN	Terminal to input the video playback signal The black level is clamped to 2.2V.
3	STBY	A1399 power save mode change terminal (Usually used at GND) CDS, AGC is set to off.
4	CAVI	Terminal to select the camera mode (EMPH IN, CAM IN —> OUT) and VTR mode at the input stage. CAMERA mode VTR system power save VTR mode CAMERA, EMPH system power save
5 6	CLP1 VCLP	Clamp pulse input terminal CLP1; CAMERA VCLP; Video (active Hi) VTH = 2.2/5 VCC
7 20 31	GND3 GND1 GND2	Driver GND CDS, AGC section GND GND of others
8	OUT	Driver output terminal Standard range 2.2V
9	OUTCLP	Terminal to clamp the OUT (pin 8) output signal black level to 2.0V and output.
10 23 29	Vcc3 Vcc1 Vcc2	Driver section Vcc CDS, AGC section Vcc Vcc of others
11	VRBS	Terminal for reverse input of internal operation amplifier of 2V regulator. To be used as 2V sense terminal.
12	VRBO	2V regulator output terminal Load of VRBo-VRTO is 160 ohm or more.

Pin No.	Signal name	Function
13	VRTO	Terminal for reverse input of internaloperation amplifier of 4V regulator To be used as 4V sense terminal
14	VRTS	4V regulator output terminal
15	CSCLP	Clamp capacitor connection terminal
16	CSOUT	Chroma suppress signal output terminal,terminal to select operation of S/H circuit for A/D.
17	CSSL	Terminal to adjust chroma suppression signal threshold. CSSL: DATA IN GND: Approx. 300 mV VCC: Approx. 560 mV
18 19	AGCMAX AGCCONT	AGC amp. max. gain adjusting terminal AGC amp. gain adjusting terminal Both are set to min gain when 0V is applied. Both are set to max. gain when Vcc is applied.
21 22	XSHP XSHD	High speed pulse input terminal for S/H (active; Low) VTH = 1/2 VCC
24	CLP4	Clamp pulse input terminal VTH = 27/51 VCC
25 26	PG IN DATA IN	CCD signal input terminal
27	ADJ	Terminal to adjust the sampling width of internal S/H. Preset: Vcc Variable mode: 15 to 50 kohm vs. GND
28	AGC OUT	AGC output terminal
30	ADCK	Trigger pulse input terminal of S/H for A/D Timing is shown below. VTH = Approx. 2.2V (fall)
32	CAM IN	Terminal to couple AGC OUT (pin 28) output signal and input.

- **IC201 (IX0224TA) BLOCK DIAGRAM**



PIN ARRANGEMENT

Pin No.	Pin name	Input/Output Format
1	XYHIN [1]	IC
2	XYHIN [0]	IC
3	XYHOUT [7]	OC2R
4	XYHOUT [6]	OC2R
5	XYHOUT [5]	OC2R
6	XYHOUT [4]	OC2R
7	XYHOUT [3]	OC2R
8	XYHOUT [2]	OC2R
9	XYHOUT [1]	OC2R
10	XYHOUT [0]	OC2R
11	XADIN [9]	IC
12	XADIN [8]	IC
13	XADIN [7]	IC
14	XADIN [6]	IC
15	XADIN [5]	IC
16	XADIN [4]	IC
17	XADIN [3]	IC
18	XADIN [2]	IC
19	XADIN [1]	IC
20	XADIN [0]	IC
21	XADCLK	OC2
22	VSS	VSS1
23	VDD	HVDD1
24	VDD	HVDD2
25	VSS	VSS2

Pin No.	Pin name	Input/Output Format
26	XADSH	OC2
27	XXCKI	IC
28	XFCKO	OC2
29	XSCKO	OC2
30	XSRES	IC
31	XMCKI	IC
32	XCP1	OC2
33	XCP2	OC2
34	XTGHDX	OC2
35	XTGVDX	OC2
36	XPBLK	OC2
37	VSS	DVSS3
38	VDD	DVDD3
39	VSS	SVSS3
40	VDD	AVDD3
41	VSS	AVSS3
42	XACOUT	OA
43	XCBU	IA
44	XREXT	IA
45	XCBL	IA
46	NC	
47	NC	
48	XAYOUT	OA
49	VSS	AVSS3
50	VDD	AVDD3

• **IC201 (IX0224TA)**
PIN ARRANGEMENT

Pin No.	Pin name	Input/Output Format
51	VDD	LVDD3
52	VSS	VSS3
53	DACTEST	IC
54	XESYNCI	IC
55	XESYNCO	OC2
56	XDCIN [7]	IC
57	XDCIN [6]	IC
58	XDCIN [5]	IC
59	XDCIN [4]	IC
60	XDCIN [3]	IC
61	XDCIN [2]	IC
62	XDCIN [1]	IC
63	XDCIN [0]	IC
64	XESRHD	OC2R
65	XESRVD	OC2R
66	XESRFCK	OC2
67	XDRBIDOUT	OC2R
68	XDCOUT [3]	OC2R
69	XDCOUT [2]	OC2R
70	XDCOUT [1]	OC2R
71	XDCOUT [0]	OC2R
72	XCDACLK	OC2
73	XCOUT [0]	OC2R
74	XCOUT [1]	OC2R
75	XCOUT [2]	OC2R
76	XCOUT [3]	OC2R
77	XCOUT [4]	OC2R
78	XCOUT [5]	OC2R
79	XCOUT [6]	OC2R
80	XCOUT [7]	OC2R
81	VSS	VSS3
82	VDD	LVDD3
83	VDD	LVDD3
84	VSS	VSS3
85	XYOUT [0]	OC2R

Pin No.	Pin name	Input/Output Format
86	XYOUT [1]	OC2R
87	XYOUT [2]	OC2R
88	XYOUT [3]	OC2R
89	XYOUT [4]	OC2R
90	XYOUT [5]	OC2R
91	XYOUT [6]	OC2R
92	XYOUT [7]	OC2R
93	XYDACLK	OC2
94	XTMNG	OC2R
95	XVDFN	OC2R
96	XVD1N	OC2R
97	XAFW	OC2R
98	XAEW	OC2R
99	XF1	OC2R
100	XPADDA [7]	ICZC2
101	XPADDA [6]	ICZC2
102	XPADDA [5]	ICZC2
103	XPADDA [4]	ICZC2
104	XPADDA [3]	ICZC2
105	XPADDA [2]	ICZC2
106	XPADDA [1]	ICZC2
107	XPADDA [0]	ICZC2
108	XPRW	IC
109	XPMOD	IC
110	XPCK	IC
111	XPCKFB	OC2
112	XPCS	IC
113	VDD	LVDD3
114	VSS	VSS3
115	XYHIN [7]	IC
116	XYHIN [6]	IC
117	XYHIN [5]	IC
118	XYHIN [4]	IC
119	XYHIN [3]	IC
120	XYHIN [2]	IC

• **IC201 (IX0224TA)**
FUNCTIONS OF SIGNALS

Signal name	Function
XADIN [9] - XADIN [0]	Input data from AD converter
XADCLK	AD converter clock
XADSH	AD converter sample hold pulse
XXCKI	Original oscillation clock input (28 MHz)
XFCKO	DSP system clock output
XSCKO	XXCK 2-division frequency clock output
XSRES	DSP, D_AUTO system reset input
XMCKI	SSG clock input (14 MHz)
XCP1	Clamp pulse (OBCP)
XCP2	Clamp pulse

Signal name	Function
XTGHDX	CCD timing pulse generator horizontal sync pulse
XTGVDX	CCD timing pulse generator vertical sync pulse
XPBLK	Preblanking pulse
XACOUT	Modulation color signal analog output
XCBU	Built-in DA converter control terminal
XREXT	Built-in Da converter control terminal
XCBL	Built-in DA converter control terminal
XAYOUT	Luminance signal analog output

• **IC201 (IX0224TA)**

FUNCTIONS OF SIGNALS

Signal name	Function
DACTEST	Built-in DA converter test clock terminal
XCDACLK	Modulation color signal external DAconverter clock output
XESYNCI	Sync signal input for SSG external synchronization
XESYNCO	Sync signal output for SSG external synchronization
XDCIN [7] - XDCIN [0]	Color difference signal data input (CFADE input)
XESRHD	Hand fluctuation correcting horizontal sync pulse
XESRVD	Hand fluctuation correcting vertical sync pulse
XESRFCK	Hand fluctuation correcting system clock output
XDRBIDOUT	Color separation identification signal output for color DIFFERENCE DATA
XDCOUT[3]-XDCOUT[0]	Color difference signal data output
XCOUT [7] - XCOUT [0]	Modulation color signal data output
XYOUT [7] - XYOUT [0]	Luminance signal data output

Signal name	Function
XYDACLK	Luminance signal external DA converter clock output
XTMNG	Data input/output timing (digital auto)
XVDFN	AF integration field output (digital auto)
XVDIN	VD inverter output (digital auto)
XAEW	AE window pulse (digital auto)
XAFW	AF window pulse (digital auto)
XFI	Field index pulse (digital auto)
XPADDA [7] - XPADDA [0]	Parameter address data bus
XPRW	Parameter read/write control signal
XPMOD	Parameter address data mode identification signal
XPCK	Parameter address data latch clock input
XPCKFB	XPCK clock feedback output
XPCS	Parameter address data bus select signal
XYHIN [7] - XYHIN [0]	YH signal data input (YFADE input)
XYHOUT [7] - XYHOUT [0]	YH signal data output (YGAMMER output)

• **IC501 (IX0215TA)**

TERMINAL ARRANGEMENT

Pin No.	Pin name	Function
1	VCC	Power supply
2	TIOCA3	Focus motor drive tilting clock
3	PB1	Focus motor driver power control (High:Power ON)
4	PB2	Focus motor driver output ON/OFF (High: Output ON)
5	TIOCB4	Zoom motor drive tilting clock
6	PB4	Zoom motor driver power control (High: Power ON)
7	PB5	Zoom motor driver output ON/OFF (High: Output ON)
8	PB6/TP14	(Low output)
9	PB7/TP15	(Low output)
10	RESO	Reset output terminal (Watchdog timer output)
11	VSS	GND
12	P90/TXD0	Serial transfer data output (system control, automatic regulator, common)
13	P91/TXD1	OSD CS output, RS-232C data output
14	P92/RXD0	Serial transfer data input (system control, automatic regulator, common)
15	P93/RXD1	OSD data output
16	SCK0	Serial transfer clock output (system control automatic regulator, common)
17	P95	(Low output) interruption terminal spare
18	P40	Shutter control strobe
20	P42	DA, shutter serial clock
21	P43	DA data strobe ("H" active)

Pin No.	Pin name	Function
22	VSS	GND
23	P44	DSP bus chip selection ("L" = Operation)
24	P45	DSP bus data latch clock
25	P46	DSP bus data/address selection ("L" = Data)
26	P47	DSP data read/write selection ("L" = Read)
27	P30	DSP data/address input/output BIT0 (parallel)
28	P31	" BIT1
29	P32	" BIT2
30	P33	" BIT3
31	P34	" BIT4
32	P35	" BIT5
33	P36	" BIT6
34	P37	" BIT7
35	VCC	Power supply
36	P10	Fluctuation detection read/write selection output
37	P11	Fluctuation detection data transfer clock output
38	P12	Fluctuation detection power-down control output
39	P13	Fluctuation detection IC reset signal ("L" Reset)
40	P14	Fluctuation correcting data output
41	P15	Fluctuation control data strobe output
42	P16	Fluctuation data transfer clock output
43	P17	Serial data from electronic zoom IC, Pull-up required
44	VSS	GND

• IC501 (IX0215TA)

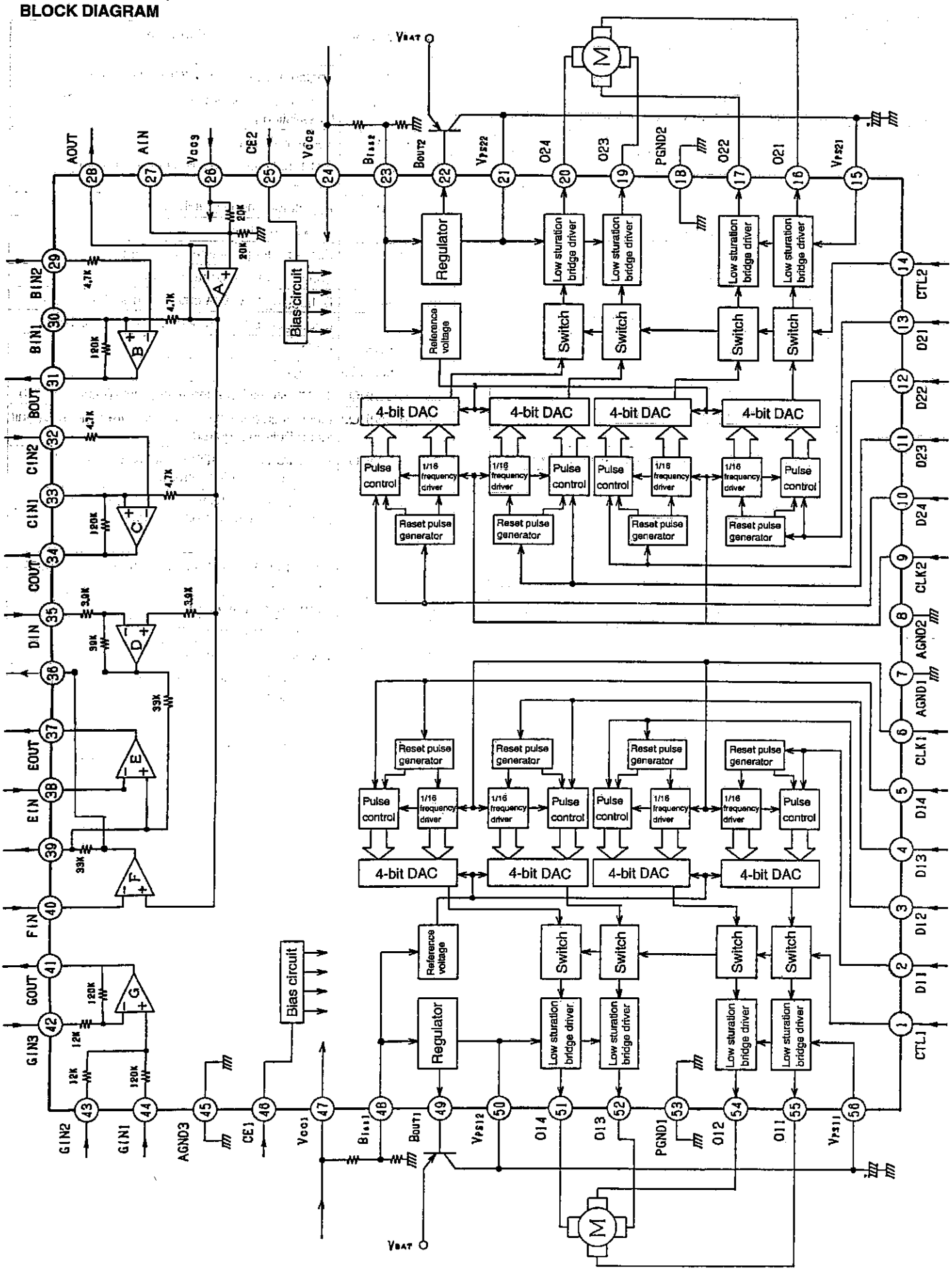
TERMINAL ARRANGEMENT

Pin No.	Pin name	Function
45	P20	Fluctuation detection data input/set data output (bit 0)
46	P21	When the pin 70 is set to LOW and (bit 1)
47	P22	nonfluctuation is selected, these terminals (bit 2)
48	P23	become input terminals. When 100K to 15 (bit 3)
49	P24	ohm MOS in the microcomputer is (bit 4)
50	P25	operative, pull-up is executed. (bit 5)
51	P26	(bit 6)
52	P27	(bit 7)
53	P50	EEPROM serial data input/output
54	P51	EEPROM serial clock output
55	P52	OSD CLK output (Debugging OSD is controlled at P15,P17.)
56	P53	Watchdog timer output (interruption pulse)
57	VSS	GND
58	P60	Snap switch input
59	P61	Still strobe switch input
60	P62	Fluctuation correcting switch input
61	Ø	
62	STBY	Hardware standby mode input terminal ("H" fixed)
63	RESET	Reset input
64	NMI	NMI "H" fixed
65	VSS	GND
66	EXTAL	8MHz x'tal connection terminal
67	XTAL	8MHz x'tal connection terminal
68	VCC	Power supply
69	P63	"H" electronic zoom provided "L" Not provided
70	P64	Fluctuasion specification ON/OFF selection ("H" Provided, "L" Not provided)
71	P65	NTSC/PAL selection ("H" PAL, "L" NTSC)
72	P66	Field index
73	MD0	Mode terminal "L" is input.
74	MD1	Mode terminal "H" is input.
75	MD2	Mode terminal "H" is input.

Pin No.	Pin name	Function
76	AVCC	Analog power supply (VCC±10% is input)
77	VRFF	A/D reference power supply (VRFF ≤ AVCC must be satisfied.)
78	AN0	Zoom switch input
79	AN1	E31/E40/HL40 model is judged according to voltage.
80	AN2	Adjustment mode switch input
81	AN3	Hole element input
82	P74	Focus motor photointerrupter input
83	P75	Zoom motor photointerrupter input
84	DA0	Debugging 8-bit D/A output 0 (Land required)
85	DA1	Debugging 8-bit D/A output 1 (Land required)
86	AVSS	GND
87	P80/IRQ0	VD input
88	P81/IRQ1	TMNG signal input terminal (from digital auto LSI)
89	P82/IRQ2	Fluctuation derection calculation end flag input (fall input) Pull-up required
90	P83/IRQ3	Serial transfer READY input (system control, automatic regulator, common)
91	P84	Serial transfer selection ("H" system control/ "L" automatic transfer) Pull-up required
92	VSS	GND
93	PA0	Focus motor drive 1 (corresponding to 1-2 phase excitation)
94	PA1	Focus motor drive 2 (ditto)
95	PA2	Focus motor drive 3 (ditto)
96	PA3	Focus motor drive 4 (ditto)
97	PA4	Zoom motor control 1 (corresponding to 2 phase excitation)
98	PA5	Zoom motor control 2 (ditto)
99	PA6	Zoom motor control 3 (ditto)

• **IC1501(MM1262XQ)**

BLOCK DIAGRAM



14. REPLACEMENT PARTS LIST

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by⚠in the Replacement Parts Lists. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1.MODEL NUMBER 2.REF. NO. 3.PART NO. 4.DESCRIPTION 5.CODE

★MARK: SPARE PARTS-DELIVERY SECTION

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

DUNTK4882KE00	J	VCR P.W.B.(VL-E31S/H)	
DUNTK4882KE02	J	VCR P.W.B.(VL-E31X)	
DUNTK4882KE03	J	VCR P.W.B.(VL-E17E)	
DUNTK4883KE00	J	MIC AMP P.W.B.	
DUNTK4884KE00	J	CAMERA P.W.B.	
DUNTK4885KE00	J	CCD P.W.B.	

DUNTK4885KE00 CCD P.W.B.

INTEGRATED CIRCUIT

VHiLZ24235/-1	J	LZ24235	BH

TRANSISTORS

Q1	VS2SK160///-1	J			AD
Q2	VS2SC4627CD-1	J			AB

FILTER

PFiLW0060TAZZ	J	Filter	AS

CAPACITORS

C1	VCSATE1VJ225M	J	2.2	35V	Tantalum	AD
C2	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C8	VCSATE1VJ335M	J	3.3	35V	Tantalum	AD

RESISTERS

R1	VRS-CY1JF000J	J	0	0.063W Chip	AA
R2	VRS-CY1JF000J	J	0	0.063W Chip	AA
R8	VRS-CY1JF000J	J	0	0.063W Chip	AA
R3	VRS-CY1JF472J	J	4.7k	0.063W Chip	AA
R6	VRS-CY1JF101J	J	100	0.063W Chip	AA
R7	VRS-CY1JF182J	J	1.8k	0.063W Chip	AA

DUNTK4882KE00 VCR P.W.B.(VL-E31S/H)
DUNTK4882KE02 VCR P.W.B.(VL-E31X)
DUNTK4882KE03 VCR P.W.B.(VL-E17E)

INTEGRATED CIRCUITS

IC401	VHiCXA1700R-1	J	CXA1700R	BA
IC403	VHiBA7655AF-1	J	BA7655AF	AG
IC3401	VHiBA7655AF-1	J	BA7655AF	AG
IC602	VHiLA7454W/-1	J	LA7454W	AT
IC603	VHiSC14S66F-1	J	SC14S66F	AC
IC604	VHiNJM2233V-1	J	NJM2233V	AE
IC701	RH-iX0221TAZZ	J	I.C.	AZ
IC702	VHiS8420AF/-1	J	S-8420AF-T1	AL
IC703	VHiSC7S08F/-1	J	SC7S08F	AC
IC704	VHiLE93C46T-1	J	LE93C46TM1	AF
IC705	RH-iX0238TAZZ	J	I.C.	AU
IC706	VHiNJM2904M-1	J	NJM2904M	AE
IC804	VHiNJM2904M-1	J	NJM2904M	AE
IC2601	VHiNJM2904M-1	J	NJM2904M	AE
IC800	VHiIR3Y21T/-1	J	I.C.	AU
IC801	RH-iX0236TAZZ	J	I.C.	AQ
IC803	VHiNJM2107F-1	J	NJM2107F	AE
IC807	VHiM62352GP-1	J	M62352GP	AQ
IC902	VHiM62352GP-1	J	M62352GP	AQ
IC5401	VHiM62352GP-1	J	M62352GP	AQ
IC900	VHiMB3785V/-1	J	MB3785APFV	AQ
IC901	VHiMB3775FV-1	J	MB3775PFV	AH
IC1404	VHiTL8851F/-1	J	I.C.	AT
IC1601	VHiTDA7052A-1	J	TDA7052AT	AK
IC2401	VHiM52358VP-1	J	M52358VP	AS
IC2703	VHiXR10823/-1	J	XR10823CQ	AT
IC3701	VHiLB1882V/-1	J	I.C.	AN
IC4702	VHiLB1888V/-1	J	I.C.	AQ
IC5780	VHiMPC1720V-1	J	I.C.	AL
IC6401	VHiNJM2509V-1	J	NJM2509V	AF
IC6402	VHiNJM2285V-1	J	NJM2285V	AF
IC6403	VHiNJM2285V-1	J	NJM2285V	AF

Ref. No.	Part No.	★	Description	Code
	TRANSISTORS			
Q401	VSRN2104///-1	J		AA
Q403	VSRN2104///-1	J		AA
Q2401	VSRN2104///-1	J		AA
Q2406	VSRN2104///-1	J		AA
Q6401	VSRN2104///-1	J		AA
Q402	VS2SC4738Y/-1	J		AA
Q409	VS2SC4738Y/-1	J		AA
Q420	VS2SC4738Y/-1	J		AA
Q435	VS2SC4738Y/-1	J		AA
Q1404	VS2SC4738Y/-1	J		AA
Q1405	VS2SC4738Y/-1	J		AA
Q1407	VS2SC4738Y/-1	J		AA
Q1408	VS2SC4738Y/-1	J		AA
Q1411	VS2SC4738Y/-1	J		AA
Q2601	VS2SC4738Y/-1	J		AA
Q3403	VS2SC4738Y/-1	J		AA
Q3404	VS2SC4738Y/-1	J		AA
Q404	VSXN4504///-1	J		AD
Q412	VSXP4601///-1	J		AB
Q416	VSXP4601///-1	J		AB
Q801	VSXP4601///-1	J		AB
Q803	VSXP4601///-1	J		AB
Q804	VSXP4601///-1	J		AB
Q927	VSXP4601///-1	J		AB
Q3405	VSXP4601///-1	J		AB
Q415	VS2SA1832Y/-1	J		AA
Q2409	VS2SA1832Y/-1	J		AA
Q417	VSXP6501///-1	J		AB
Q708	VSXP6501///-1	J		AB
Q1409	VSXP6501///-1	J		AB
Q1412	VSXP6501///-1	J		AB
Q3401	VSXP6501///-1	J		AB
Q3402	VSXP6501///-1	J		AB
Q432	VSUMD2/////-1	J		AC
Q434	VSUMD2/////-1	J		AC
Q433	VSXP1501///-1	J		AB
Q606	VSXP1501///-1	J		AB
Q603	VSDTC323TK/-1	J		AB
Q604	VSRN4604///-1	J		AB
Q2603	VSRN4604///-1	J		AB
Q701	VSUMH2/////-1	J		AC
Q702	VSUMH2/////-1	J		AC
Q703	VSUMH2/////-1	J		AC
Q704	VSUMH2/////-1	J		AC
Q705	VSUMH2/////-1	J		AC
Q706	VSXP4111///-1	J		AB
Q707	VSDTC144EE/-1	J		AA
Q813	VSDTC144EE/-1	J		AA
Q815	VSDTC144EE/-1	J		AA
Q902	VSDTC144EE/-1	J		AA
Q917	VSDTC144EE/-1	J		AA
Q812	VSDTA144EE/-1	J		AA
Q814	VSDTA144EE/-1	J		AA
Q916	VSDTA144EE/-1	J		AA
Q1301	VSDTA144EE/-1	J		AA
Q901	VS2SB1386-R-1	J		AC
Q903	VS2SD2216//-1	J		AA
Q911	VS2SD2216//-1	J		AA
Q913	VS2SD2216//-1	J		AA
Q924	VS2SD2216//-1	J		AA
Q904	VS2SB1121T/-1	J		AC
Q908	VS2SB1121T/-1	J		AC
Q5780	VS2SB1121T/-1	J		AC
Q905	VS2SB12956/-1	J		AB
Q915	VS2SB12956/-1	J		AB
Q906	VS2SB1302S/-1	J		AD
Q907	VSMPL1/////-1	J		AE
Q922	VSMPL1/////-1	J		AE
Q923	VSMPL1/////-1	J		AE
Q909	VSXP4213///-1	J		AB
Q914	VSXP4213///-1	J		AB
Q2407	VSXP4213///-1	J		AB
Q2408	VSXP4213///-1	J		AB
Q910	VSXP4113///-1	J		AA
Q912	VSXP4113///-1	J		AA
Q921	VSFP301////-1	J		AD
Q926	VSFMY1/////-1	J		AB
Q1601	VSXN4402///-1	J		AC
Q1602	VSUMG2/////-1	J		AC
Q1604	VSUMG2/////-1	J		AC
Q2602	VSUMG2/////-1	J		AC
Q1603	VS2SA1298Y/-1	J		AB
Q3406	VSRN1102///-1	J		AA
Q5781	VSXN6401///-1	J		AB
Q6402	VS2SD1328-S-1	J		AD
	DIODES			
D401	VHDMA132WA/-1	J	Diode	AA
D705	VHDMA132WA/-1	J	Diode	AA
D402	VHDMA132WK/-1	J	Diode	AA
D604	VHDMA132WK/-1	J	Diode	AA
D704	VHDMA132WK/-1	J	Diode	AA
D2401	VHDMA132WK/-1	J	Diode	AA
D603	VHDMA132K//-1	J	Diode	AA
D804	VHDMA132K//-1	J	Diode	AA
D810	VHDMA132K//-1	J	Diode	AA
D3601	VHDMA132K//-1	J	Diode	AA
D701	VHDIMN10///-1	J	Diode	AB
D702	VHDIMN10///-1	J	Diode	AB
D901	VHDIMN10///-1	J	Diode	AB
D805	RH-EX0226CEZZ	J	Zener Diode	AB
D806	VHDHVM17-5/-1	J	Diode	AD
D816	VHDHVM17-5/-1	J	Diode	AD
D817	VHDHVM17-5/-1	J	Diode	AD
D1406	VHDHVM17-5/-1	J	Diode	AD
D900	VHDSFPB54//2E	J	Diode	AC

Ref. No.	Part No.	★	Description	Code
D902	RH-EX0626CEZZ	J	Zener Diode	AB
D1405	VHDMA133///-1	J	Diode	AB
D6401	VHDMA133///-1	J	Diode	AB
D6402	VHDMA133///-1	J	Diode	AB
D6403	VHDMA133///-1	J	Diode	AB
D6407	VHDMA133///-1	J	Diode	AB
D3401	VHDMA147///-1	J	Diode	AB

THERMISTOR

TH802	VHHT1103K44-1	J	Thermistor	AD
TH1401	VHHNTA20234-1	J	Thermistor	AC

CRYSTAL

X401	RCRSC0047TAZZ	J	Crystal	AL
X701	RCRSC0033TAZZ	J	Crystal	AG
X702	RCRSC0032TAZZ	J	Crystal	AG
X800	RCRSC0062TAZZ	J	Crystal	AL

COIL & FILTER

CF900	RFILC0051TAZZ	J	Filter	AE
FL701	RCILB0039TAZZ	J	Oscillation Coil	AE
FL800	RCILI0320TAZZ	J	IF Coil	AE
FL1401	RCILF0320TAZZ	J	Coil	AK
FL1402	RCILF0313TAZZ	J	Coil	AF
L403	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L701	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L702	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L703	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L919	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L2741	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L4720	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
L406	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L800	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L801	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L820	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L1402	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L1601	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L3401	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L5401	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L6401	VP-NM470K2R0N	J	Peaking 47μH 10%	AB
L408	VPAWM820J120N	J	Peaking 82μH	AD
L409	VPAWM5R6J1R8N	J	Peaking 5.6μH	AD
L411	VPABM1R2JR90N	J	Peaking 1.2μH	AC
L412	VPABM680J120N	J	Peaking 68μH	AC
L603	VP-NM101K4R2N	J	Peaking 100μH 10%	AC
L2401	VP-NM101K4R2N	J	Peaking 100μH 10%	AC
L802	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L803	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L903	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L904	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L910	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L911	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L912	VP-NM100KR42N	J	Peaking 10μH 10%	AB
L805	VPAWM180J3R6N	J	Peaking 18μH	AD
L806	VPABM100J2R6N	J	Peaking 10μH	AC
L807	VPABM220J4R1N	J	Peaking 22μH	AC
L808	VPAWM1R2JR78N	J	Peaking 1.2μH	AD
L809	VPAWM120J2R8N	J	Peaking 12μH	AD
L810	VPAWM120J2R8N	J	Peaking 12μH	AD
L900	RCILP0189TAZZ	J	Coil	AF
L901	RCILP0193TAZZ	J	Coil	AF
L915	RCILP0193TAZZ	J	Coil	AF
L902	VP-WM2R2MR13N	J	Peaking 2.2μH 20%	AB
L906	VP-WM2R2MR13N	J	Peaking 2.2μH 20%	AB
L908	VP-WM2R2MR13N	J	Peaking 2.2μH 20%	AB
L905	VP-WM4R7MR20N	J	Peaking 4.7μH 20%	AB
L907	RCILP0183TAZZ	J	Coil	AE
L909	RCILP0186TAZZ	J	Coil	AF
L916	RCILP0196TAZZ	J	Coil	AE
L917	RCILP0187TAZZ	J	Coil	AE
L918	RCILP0187TAZZ	J	Coil	AE
L920	VP-QM100KR33N	J	Peaking 10μH 10%	AC
L3403	VP-1M331J260N	J	Peaking 330μH	AC
L3404	VP-1M181J130N	J	Peaking 180μH	AB
L3405	VPABM4R7J1R7N	J	Peaking 4.7μH	AC
L3406	VPABM470J8R3N	J	Peaking 47μH	AC
L3407	VPABM1R0JR82N	J	Peaking 1μH	AC
L3408	VP-1M471J310N	J	Peaking 470μH	AC
L3411	VP-1M391J330N	J	Peaking 390μH	AB
L3412	VP-1M121J9R0N	J	Peaking 120μH	AB
L3413	VPAWM8R2J2R3N	J	Peaking 8.2μH	

TRANSFORMER

⚠T900	RTRNZ0076TAZZ	J	Transformer	AG

CAPACITORS

Ref. No.	Part No.	★	Description	Code
C401	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C621	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C853	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C854	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C402	VCKYTV1CF474Z	J	0.47 16V Ceramic	AB
C421	VCKYTV1CF474Z	J	0.47 16V Ceramic	AB
C422	VCKYTV1CF474Z	J	0.47 16V Ceramic	AB
C423	VCKYTV1CF474Z	J	0.47 16V Ceramic	AB
C6409	VCKYTV1CF474Z	J	0.47 16V Ceramic	AB
C403	VCCCCY1HH221J	J	220p 50V Ceramic	AA
C404	VCCCCY1HH221J	J	220p 50V Ceramic	AA
C639	VCCCCY1HH221J	J	220p 50V Ceramic	AA
C1903	VCCCCY1HH221J	J	220p 50V Ceramic	AA
C405	VCSATE0GJ476M	J	47 4.0V Tantalum	AD
C459	VCSATE0GJ476M	J	47 4.0V Tantalum	AD
C406	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C410	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C418	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C428	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C436	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C445	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C450	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C453	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C454	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C463	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C474	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C476	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C479	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C480	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C481	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C482	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C491	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C606	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C615	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C626	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C645	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C646	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C800	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C801	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C802	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C803	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C804	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C805	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C806	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C810	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C812	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C819	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C825	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C827	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C843	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1430	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1432	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1435	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1438	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1439	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2402	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2413	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2420	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2742	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2743	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2746	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C2755	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3406	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3409	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3410	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3411	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3412	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3415	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3418	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3425	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3426	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3427	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3428	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C3429	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6407	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6408	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6411	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6413	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6417	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6419	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6420	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6421	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6425	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C407	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C413	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C415	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C451	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C452	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C636	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C895	VCSATA0JJ106M	J	10 6.3V Tantalum	AD
C409	VCSATA1AJ106M	J	10 10V Tantalum	AC
C411	VCSATA1AJ106M	J	10 10V Tantalum	AC
C416	VCSATA1AJ106M	J	10 10V Tantalum	AC
C417	VCSATA1AJ106M	J	10 10V Tantalum	AC
C419	VCSATA1AJ106M	J	10 10V Tantalum	AC
C427	VCSATA1AJ106M	J	10 10V Tantalum	AC
C437	VCSATA1AJ106M	J	10 10V Tantalum	AC
C449	VCSATA1AJ106M	J	10 10V Tantalum	AC
C613	VCSATA1AJ106M	J	10 10V Tantalum	AC
C703	VCSATA1AJ106M	J	10 10V Tantalum	AC
C706	VCSATA1AJ106M	J	10 10V Tantalum	AC
C1431	VCSATA1AJ106M	J	10 10V Tantalum	AC
C2741	VCSATA1AJ106M	J	10 10V Tantalum	AC
C4725	VCSATA1AJ106M	J	10 10V Tantalum	AC
C4728	VCSATA1AJ106M	J	10 10V Tantalum	AC
C5401	VCSATA1AJ106M	J	10 10V Tantalum	AC
C412	VCSATA1AJ335M	J	3.3 10V Tantalum	AC
C414	VCSATA1AJ335M	J	3.3 10V Tantalum	AC
C424	VCKYTV1CB224K	J	0.22 16V Ceramic	AB
C820	VCKYTV1CB224K	J	0.22 16V Ceramic	AB
C425	VCSATD1AJ107M	J	100 10V Tantalum	AF

Ref. No.	Part No.	★	Description	Code
C426	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C467	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C733	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C743	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C1443	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C1446	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C2412	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C2417	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C6406	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C429	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C440	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C469	VCCCCY1HH101	J	100p 50V Ceramic	AA
C851	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C900	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C921	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C3405	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C3421	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C5784	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C430	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C624	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C740	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C4720	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C4726	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C4727	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C431	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C435	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C637	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C814	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C817	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C2404	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C2408	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C2602	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C2607	VCSAPD1CJ105M	J	1.0 16V Tantalum	AC
C432	VCSAPD1DJ684M	J	0.68 20V Tantalum	AC
C433	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C906	VCYCY1EB223K	J	0.022 25V Ceramic	AA
C913	VCYCY1EB223K	J	0.022 25V Ceramic	AA
C915	VCYCY1EB223K	J	0.022 25V Ceramic	AA
C434	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C709	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C712	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C721	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C722	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C726	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C741	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C860	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C867	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C882	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C886	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C901	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C916	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C917	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C918	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C919	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C920	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1902	VCKYCY1HB102K	J	1000p 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C2416	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C2418	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C441	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C822	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C877	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C1450	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C3402	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C460	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C3419	VCCCCY1HH470	J	47p 50V Ceramic	AA
C461	VCCCCY1HH121J	J	120p 50V Ceramic	AA
C468	VCCCCY1HH121J	J	120p 50V Ceramic	AA
C2414	VCCCCY1HH121J	J	120p 50V Ceramic	AA
C3420	VCCCCY1HH121J	J	120p 50V Ceramic	AA
C465	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C625	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C865	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C874	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C1451	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C475	VCCCCY1HH391J	J	390p 50V Ceramic	AA
C875	VCCCCY1HH391J	J	390p 50V Ceramic	AA
C910	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C486	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C725	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C873	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C3423	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C607	VCSATC1AJ476M	J	47μ 10V Tantalum	AE
C705	VCSATC1AJ476M	J	47μ 10V Tantalum	AE
C839	VCSATC1AJ476M	J	47μ 10V Tantalum	AE
C967	VCKYTV1HB103K	J	0.01μ 50V Ceramic	AB
C609	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C630	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C640	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C641	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C815	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C899	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C938	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C939	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C941	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C942	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C943	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C944	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C946	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C952	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C965	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C1436	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C1440	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C1603	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C1911	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C2421	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C2620	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C3707	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C3708	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C3709	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C4732	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C4735	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB
C6410	VCKYTV1CF105Z	J	1.0μ 16V Ceramic	AB

Ref. No.	Part No.	★	Description			Code
C6412	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6415	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6418	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6422	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6423	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6424	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C6426	VCKYTV1CF105Z	J	1.0μ	16V	Ceramic	AB
C610	VCSATA0JJ475M	J	4.7μ	6.3V	Tantalum	AC
C612	VCSATA0JJ475M	J	4.7μ	6.3V	Tantalum	AC
C638	VCSATA0JJ475M	J	4.7μ	6.3V	Tantalum	AC
C611	VCSATE0JJ226M	J	22μ	6.3V	Tantalum	AD
C616	VCSATE0JJ226M	J	22μ	6.3V	Tantalum	AD
C634	VCSATE0JJ226M	J	22μ	6.3V	Tantalum	AD
C619	VCKYCY1CF333Z	J	0.033μ	16V	Ceramic	AA
C620	VCKYCY1CF473Z	J	0.047μ	16V	Ceramic	AA
C1601	VCKYCY1CF473Z	J	0.047μ	16V	Ceramic	AA
C627	VCKYCY1HB222K	J	2200p	50V	Ceramic	AA
C635	VCKYCY1HB222K	J	2200p	50V	Ceramic	AA
C3416	VCKYCY1HB222K	J	2200p	50V	Ceramic	AA
C632	VCSATA0GJ106M	J	10	4.0V	Tantalum	AC
C813	VCSATA0GJ106M	J	10	4.0V	Tantalum	AC
C633	VCSATE1AJ226M	J	22	10V	Tantalum	AD
C2603	VCSATE1AJ226M	J	22	10V	Tantalum	AD
C3407	VCSATE1AJ226M	J	22	10V	Tantalum	AD
C642	VCKYTV1CF225Z	J	2.2	16V	Ceramic	AC
C648	VCKYTV1CF225Z	J	2.2	16V	Ceramic	AC
C1604	VCKYTV1CF225Z	J	2.2	16V	Ceramic	AC
C643	VCSATA1CJ225M	J	2.2	16V	Tantalum	AC
C649	VCSATA1CJ225M	J	2.2	16V	Tantalum	AC
C650	VCSATA1CJ225M	J	2.2	16V	Tantalum	AC
C647	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C701	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C702	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C704	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C707	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C715	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C727	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C730	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C731	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C732	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C742	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C828	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C835	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C836	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C837	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C838	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C841	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C842	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C859	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C862	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C869	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C870	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C887	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C890	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C940	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C1433	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA

Ref. No.	Part No.	★	Description			Code
C2744	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C2751	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C2752	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C3703	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C3704	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C3705	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C3706	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C4729	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C4730	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C5402	VCKYCY1CF104Z	J	0.1	16V	Ceramic	AA
C708	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C745	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C902	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C905	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C912	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C955	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C958	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C4723	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C4724	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C710	VCCCCY1HH180J	J	18p		Ceramic	AA
C711	VCCCCY1HH200J	J	20p		Ceramic	AA
C713	VCSAPD1EJ334M	J	0.33	25V	Tantalum	AC
C714	VCKYCY1HB471K	J	470p		Ceramic	AA
C904	VCKYCY1HB471K	J	470p		Ceramic	AA
C1901	VCKYCY1HB471K	J	470p		Ceramic	AA
C2609	VCKYCY1HB471K	J	470p		Ceramic	AA
C2753	VCKYCY1HB471K	J	470p		Ceramic	AA
C2754	VCKYCY1HB471K	J	470p		Ceramic	AA
C720	VCCCCY1HH271J	J	270p		Ceramic	AA
C723	VCCCCY1HH271J	J	270p		Ceramic	AA
C3403	VCCCCY1HH271J	J	270p		Ceramic	AA
C724	VCCCCY1HH120J	J	12p		Ceramic	AA
C744	VCFYEC1CM104J	J	0.1	16V		AD
C807	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C808	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C809	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C824	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C872	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C876	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C903	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C5780	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C5781	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C5782	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C5783	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C811	VCKYCY1CF334Z	J	0.33	16V	Ceramic	AA
C816	VCKYCY1EF153Z	J	0.015	25V	Ceramic	AA
C821	VCCCCY1HH151J	J	150p		Ceramic	AA
C864	VCCCCY1HH151J	J	150p		Ceramic	AA
C826	VCSATE1VJ225M	J	2.2	35V	Tantalum	AD
C829	VCSATC1CJ336M	J	33	16V	Tantalum	AE
C845	VCSATC1CJ336M	J	33	16V	Tantalum	AE
C830	VCSATE1DJ475M	J	4.7	20V	Tantalum	AD
C833	VCSATE1DJ475M	J	4.7	20V	Tantalum	AD
C840	VCSATE1DJ475M	J	4.7	20V	Tantalum	AD
C855	VCSATE1DJ475M	J	4.7	20V	Tantalum	AD
C857	VCSATE1DJ475M	J	4.7	20V	Tantalum	AD

Ref. No.	Part No.	★	Description	Code
C834	VCSATD1VJ106M	J	10 35V Tantalum	AF
C844	VCSAPD1DJ474M	J	0.47 20V Tantalum	AD
C850	VCCCCY1HH471J	J	470p Ceramic	AA
C908	VCCCCY1HH471J	J	470p Ceramic	AA
C909	VCCCCY1HH471J	J	470p Ceramic	AA
C1444	VCCCCY1HH471J	J	470p Ceramic	AA
C6414	VCCCCY1HH471J	J	470p Ceramic	AA
C852	VCCCCY1HH181J	J	180p Ceramic	AA
C856	VCCCCY1HH181J	J	180p Ceramic	AA
C861	VCCCCY1HH181J	J	180p Ceramic	AA
C879	VCCCCY1HH181J	J	180p Ceramic	AA
C2604	VCCCCY1HH181J	J	180p Ceramic	AA
C2605	VCCCCY1HH181J	J	180p Ceramic	AA
C858	VCKYCY1HB561K	J	560p Ceramic	AA
C863	VCKYCY1CF224Z	J	0.22 16V Ceramic	AA
C3700	VCKYCY1CF224Z	J	0.22 16V Ceramic	AA
C3701	VCKYCY1CF224Z	J	0.22 16V Ceramic	AA
C3702	VCKYCY1CF224Z	J	0.22 16V Ceramic	AA
C866	VCCCCY1HH220J	J	22p Ceramic	AA
C868	VCE9PF1CW475M	J	4.7 16V Electrolytic	AC
C871	VCKYCY1HB681K	J	680p Ceramic	AA
C878	VCCCCY1HH390J	J	39p Ceramic	AA
C3424	VCCCCY1HH390J	J	39p Ceramic	AA
C907	VCEAPF1AW476M	J	47 10V EL.	AB
C911	VCKYTV1CF104Z	J	0.10 16V Ceramic	AA
C933	RC-CZ0009TAZZ	J		AE
C934	RC-CZ0009TAZZ	J		AE
C936	RC-CZ0009TAZZ	J		AE
C945	RC-KZ0026TAZZ	J		AF
C947	RC-KZ0026TAZZ	J		AF
C959	RC-KZ0026TAZZ	J		AF
C962	RC-KZ0026TAZZ	J		AF
C963	RC-KZ0026TAZZ	J		AF
C964	RC-KZ0026TAZZ	J		AF
C948	RC-CZ0010TAZZ	J		AC
C950	RC-CZ0010TAZZ	J		AC
C954	RC-CZ0010TAZZ	J		AC
C956	RC-CZ0010TAZZ	J		AC
C957	RC-CZ0010TAZZ	J		AC
C949	RC-CZ0012TAZZ	J		AE
C961	RC-CZ0012TAZZ	J		AE
C951	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C953	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1906	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1907	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1908	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1909	VCKYTV1EB104K	J	0.1 25V Ceramic	AB

Ref. No.	Part No.	★	Description	Code
C966	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C970	VCEAPT1EN226M	J	22 25V Electrolytic	AD
C1434	VCKYCY1HB472K	J	4700p Ceramic	AA
C2750	VCKYCY1HB472K	J	4700p Ceramic	AA
C4734	VCKYCY1HB472K	J	4700p Ceramic	AA
C1441	VCKYTV1HF104Z	J	0.10 50V Ceramic	AA
C1445	VCCCCY1HH820	J	82p Ceramic	AA
C1602	VCSATF1CJ476M	J	47 16V Tantalum	
C1904	VCKYCY1HB271K	J	270p Ceramic	AA
C1905	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C2407	VCKYCY1HB152K	J	1500p Ceramic	AA
C2745	VCKYCY1HB152K	J	1500p Ceramic	AA
C3404	VCCCCY1HH680J	J	68p Ceramic	AA
C3408	VCCCCY1HH5R0C	J	5.0p Ceramic	AA
C3413	VCCCCY1HH100D	J	10p Ceramic	AA
C4721	VCKYCY1EB822K	J	8200p 25V Ceramic	AA
C4722	VCKYCY1EB822K	J	8200p 25V Ceramic	AA
C4731	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C5785	VCSATE1CJ106M	J	10 16V Tantalum	AD
C4733	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C5785	VCSATE1CJ106M	J	10 16V Tantalum	AD
C5786	VCEAPF1CW106M	J	10 16V Electrolytic	AB

RESISTORS

R403	VRN-CZ1JF122D	J	1.2k	0.063W	AA
R431	VRN-CZ1JF122D	J	1.2k	0.063W	AA
R404	VRN-CZ1JF471D	J	470	0.063W	AA
R405	VRN-CZ1JF332D	J	3.3k	0.063W	AA
R406	VRS-CZ1JF102J	J	1.0k	0.063W	AA
R407	VRS-CZ1JF102J	J	1.0k	0.063W	AA

Ref. No.	Part No.	★	Description	Code
R408	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R415	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R443	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R444	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R446	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R459	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R460	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R464	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R471	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R497	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R603	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R636	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R639	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R702	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R703	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R704	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R705	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R706	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R707	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R708	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R709	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R710	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R711	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R712	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R713	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R714	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R715	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R740	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R741	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R742	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R743	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R744	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R745	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R746	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R747	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R748	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R755	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R756	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R757	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R758	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R760	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R767	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R768	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R769	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R771	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R777	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R778	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R781	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R825	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R863	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R897	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R912	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R974	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R985	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1426	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1427	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1434	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1441	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1443	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1450	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R1888	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R2749	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R2750	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3401	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3402	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3409	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3418	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3421	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3422	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R3426	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R4405	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R4406	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R4407	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R4408	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R4438	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R6411	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R6412	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R6703	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R6704	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R6705	VRS-CZ1JF102J	J	1.0k 0.063W	AA
R409	VRS-CZ1JF223J	J	22k 0.063W	AA
R410	VRS-CZ1JF223J	J	22k 0.063W	AA
R470	VRS-CZ1JF223J	J	22k 0.063W	AA
R498	VRS-CZ1JF223J	J	22k 0.063W	AA
R610	VRS-CZ1JF223J	J	22k 0.063W	AA
R734	VRS-CZ1JF223J	J	22k 0.063W	AA
R862	VRS-CZ1JF223J	J	22k 0.063W	AA
R958	VRS-CZ1JF223J	J	22k 0.063W	AA
R1430	VRS-CZ1JF223J	J	22k 0.063W	AA
R866	VRS-CZ1JF223J	J	22k 0.063W	AA
R1442	VRS-CZ1JF223J	J	22k 0.063W	AA
R1447	VRS-CZ1JF223J	J	22k 0.063W	AA
R1453	VRS-CZ1JF223J	J	22k 0.063W	AA
R1607	VRS-CZ1JF223J	J	22k 0.063W	AA
R1608	VRS-CZ1JF223J	J	22k 0.063W	AA
R1912	VRS-CZ1JF223J	J	22k 0.063W	AA
R2747	VRS-CZ1JF223J	J	22k 0.063W	AA
R3410	VRS-CZ1JF223J	J	22k 0.063W	AA
R3411	VRS-CZ1JF223J	J	22k 0.063W	AA
R4417	VRS-CZ1JF223J	J	22k 0.063W	AA
R4418	VRS-CZ1JF223J	J	22k 0.063W	AA
R4423	VRS-CZ1JF223J	J	22k 0.063W	AA
R4429	VRS-CZ1JF223J	J	22k 0.063W	AA
R411	VRS-CZ1JF750J	J	75 0.063W	AA
R6403	VRS-CZ1JF750J	J	75 0.063W	AA
R412	VRS-CZ1JF154J	J	150k 0.063W	AA
R722	VRS-CZ1JF154J	J	150k 0.063W	AA
R724	VRS-CZ1JF154J	J	150k 0.063W	AA
R807	VRS-CZ1JF154J	J	150k 0.063W	AA
R810	VRS-CZ1JF154J	J	150k 0.063W	AA
R414	VRS-CZ1JF821J	J	820 0.063W	AA
R445	VRS-CZ1JF821J	J	820 0.063W	AA

Ref. No.	Part No.	★		Description	Code
R880	VRS-CZ1JF821J	J	820	0.063W	AA
R1419	VRS-CZ1JF821J	J	820	0.063W	AA
R3403	VRS-CZ1JF821J	J	820	0.063W	AA
R6406	VRS-CZ1JF821J	J	820	0.063W	AA
R416	VRS-CZ1JF183J	J	18k	0.063W	AA
R417	VRS-CZ1JF183J	J	18k	0.063W	AA
R433	VRS-CZ1JF183J	J	18k	0.063W	AA
R467	VRS-CZ1JF183J	J	18k	0.063W	AA
R620	VRS-CZ1JF183J	J	18k	0.063W	AA
R723	VRS-CZ1JF183J	J	18k	0.063W	AA
R4426	VRS-CZ1JF183J	J	18k	0.063W	AA
R419	VRS-CZ1JF333J	J	33k	0.063W	AA
R421	VRS-CZ1JF333J	J	33k	0.063W	AA
R496	VRS-CZ1JF333J	J	33k	0.063W	AA
R609	VRS-CZ1JF333J	J	33k	0.063W	AA
R617	VRS-CZ1JF333J	J	33k	0.063W	AA
R634	VRS-CZ1JF333J	J	33k	0.063W	AA
R635	VRS-CZ1JF333J	J	33k	0.063W	AA
R806	VRS-CZ1JF333J	J	33k	0.063W	AA
R809	VRS-CZ1JF333J	J	33k	0.063W	AA
R857	VRS-CZ1JF333J	J	33k	0.063W	AA
R890	VRS-CZ1JF333J	J	33k	0.063W	AA
R916	VRS-CZ1JF333J	J	33k	0.063W	AA
R944	VRS-CZ1JF333J	J	33k	0.063W	AA
R1905	VRS-CZ1JF333J	J	33k	0.063W	AA
R1906	VRS-CZ1JF333J	J	33k	0.063W	AA
R1918	VRS-CZ1JF333J	J	33k	0.063W	AA
R4722	VRS-CZ1JF333J	J	33k	0.063W	AA
R422	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R608	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R730	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R868	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R869	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1301	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1454	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1471	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1810	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1811	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1913	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R1914	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R2430	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R2610	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R3425	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R6401	VRS-CZ1JF472J	J	4.7k	0.063W	AA
R423	VRS-CZ1JF103J	J	10k	0.063W	AA
R613	VRS-CZ1JF103J	J	10k	0.063W	AA
R618	VRS-CZ1JF103J	J	10k	0.063W	AA
R735	VRS-CZ1JF103J	J	10k	0.063W	AA
R754	VRS-CZ1JF103J	J	10k	0.063W	AA
R761	VRS-CZ1JF103J	J	10k	0.063W	AA
R762	VRS-CZ1JF103J	J	10k	0.063W	AA
R765	VRS-CZ1JF103J	J	10k	0.063W	AA
R770	VRS-CZ1JF103J	J	10k	0.063W	AA
R787	VRS-CZ1JF103J	J	10k	0.063W	AA
R790	VRS-CZ1JF103J	J	10k	0.063W	AA
R791	VRS-CZ1JF103J	J	10k	0.063W	AA
R792	VRS-CZ1JF103J	J	10k	0.063W	AA
R840	VRS-CZ1JF103J	J	10k	0.063W	AA
R844	VRS-CZ1JF103J	J	10k	0.063W	AA
R860	VRS-CZ1JF103J	J	10k	0.063W	AA
R861	VRS-CZ1JF103J	J	10k	0.063W	AA
R873	VRS-CZ1JF103J	J	10k	0.063W	AA
R918	VRS-CZ1JF103J	J	10k	0.063W	AA
R920	VRS-CZ1JF103J	J	10k	0.063W	AA
R948	VRS-CZ1JF103J	J	10k	0.063W	AA
R1463	VRS-CZ1JF103J	J	10k	0.063W	AA
R1610	VRS-CZ1JF103J	J	10k	0.063W	AA
R1612	VRS-CZ1JF103J	J	10k	0.063W	AA
R1889	VRS-CZ1JF103J	J	10k	0.063W	AA
R1899	VRS-CZ1JF103J	J	10k	0.063W	AA
R1923	VRS-CZ1JF103J	J	10k	0.063W	AA
R2420	VRS-CZ1JF103J	J	10k	0.063W	AA
R2432	VRS-CZ1JF103J	J	10k	0.063W	AA
R2436	VRS-CZ1JF103J	J	10k	0.063W	AA
R2611	VRS-CZ1JF103J	J	10k	0.063W	AA
R3712	VRS-CZ1JF103J	J	10k	0.063W	AA
R4401	VRS-CZ1JF103J	J	10k	0.063W	AA
R4404	VRS-CZ1JF103J	J	10k	0.063W	AA
R5401	VRS-CZ1JF103J	J	10k	0.063W	AA
R5781	VRS-CZ1JF103J	J	10k	0.063W	AA
R5784	VRS-CZ1JF103J	J	10k	0.063W	AA
R5785	VRS-CZ1JF103J	J	10k	0.063W	AA
R5786	VRS-CZ1JF103J	J	10k	0.063W	AA
R5787	VRS-CZ1JF103J	J	10k	0.063W	AA
R5788	VRS-CZ1JF103J	J	10k	0.063W	AA
R6416	VRS-CZ1JF103J	J	10k	0.063W	AA
R424	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R607	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R946	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R984	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R1869	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R2622	VRS-CZ1JF392J	J	3.9k	0.063W	AA
R425	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R451	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R832	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R886	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R889	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R900	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R3711	VRS-CZ1JF562J	J	5.6k	0.063W	AA
R426	VRN-CZ1JF183D	J	18k	0.063W	AA
R941	VRN-CZ1JF183D	J	18k	0.063W	AA
R953	VRN-CZ1JF183D	J	18k	0.063W	AA
R988	VRN-CZ1JF183D	J	18k	0.063W	AA
R1920	VRN-CZ1JF183D	J	18k	0.063W	AA
R427	VRS-CZ1JF182J	J	1.8k	0.063W	AA
R465	VRS-CZ1JF182J	J	1.8k	0.063W	AA
R3405	VRS-CZ1JF182J	J	1.8k	0.063W	AA
R429	VRS-CZ1JF222J	J	2.2k	0.063W	AA
R469	VRS-CZ1JF222J	J	2.2k	0.063W	AA
R476	VRS-CZ1JF222J	J	2.2k	0.063W	AA
R943	VRS-CZ1JF222J	J	2.2k	0.063W	AA
R1603	VRS-CZ1JF222J	J	2.2k	0.063W	AA

Ref. No.	Part No.	★	Description	Code
R2417	VRS-CZ1JF222J	J	2.2k 0.063W	AA
R2421	VRS-CZ1JF222J	J	2.2k 0.063W	AA
R3710	VRS-CZ1JF222J	J	2.2k 0.063W	AA
R4430	VRS-CZ1JF222J	J	2.2k 0.063W	AA
R430	VRN-CZ1JF152D	J	1.5k 0.063W	AA
R6409	VRN-CZ1JF152D	J	1.5k 0.063W	AA
R432	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R917	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R982	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R1425	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R1432	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R2605	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R2606	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R3428	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R4441	VRS-CZ1JF332J	J	3.3k 0.063W	AA
R453	VRS-CZ1JF681J	J	680 0.063W	AA
R775	VRS-CZ1JF681J	J	680 0.063W	AA
R776	VRS-CZ1JF681J	J	680 0.063W	AA
R1449	VRS-CZ1JF681J	J	680 0.063W	AA
R1470	VRS-CZ1JF681J	J	680 0.063W	AA
R1910	VRS-CZ1JF681J	J	680 0.063W	AA
R2752	VRS-CZ1JF681J	J	680 0.063W	AA
R4410	VRS-CZ1JF681J	J	680 0.063W	AA
R454	VRS-CZ1JF561J	J	560 0.063W	AA
R612	VRS-CZ1JF561J	J	560 0.063W	AA
R625	VRS-CZ1JF561J	J	560 0.063W	AA
R834	VRS-CZ1JF561J	J	560 0.063W	AA
R839	VRS-CZ1JF561J	J	560 0.063W	AA
R841	VRS-CZ1JF561J	J	560 0.063W	AA
R842	VRS-CZ1JF561J	J	560 0.063W	AA
R843	VRS-CZ1JF561J	J	560 0.063W	AA
R892	VRS-CZ1JF561J	J	560 0.063W	AA
R899	VRS-CZ1JF561J	J	560 0.063W	AA
R1885	VRS-CZ1JF561J	J	560 0.063W	AA
R3423	VRS-CZ1JF561J	J	560 0.063W	AA
R3424	VRS-CZ1JF561J	J	560 0.063W	AA
R3431	VRS-CZ1JF561J	J	560 0.063W	AA
R455	VRS-CZ1JF471J	J	470 0.063W	AA
R475	VRS-CZ1JF471J	J	470 0.063W	AA
R829	VRS-CZ1JF471J	J	470 0.063W	AA
R1837	VRS-CZ1JF471J	J	470 0.063W	AA
R3404	VRS-CZ1JF471J	J	470 0.063W	AA
R3413	VRS-CZ1JF471J	J	470 0.063W	AA
R3429	VRS-CZ1JF471J	J	470 0.063W	AA
R3430	VRS-CZ1JF471J	J	470 0.063W	AA
R457	VRS-CZ1JF000J	J	0 0.063W	AA
R461	VRS-CZ1JF000J	J	0 0.063W	AA
R486	VRS-CZ1JF000J	J	0 0.063W	AA
R766	VRS-CZ1JF000J	J	0 0.063W	AA
R815	VRS-CZ1JF000J	J	0 0.063W	AA
R816	VRS-CZ1JF000J	J	0 0.063W	AA
R817	VRS-CZ1JF000J	J	0 0.063W	AA
R847	VRS-CZ1JF000J	J	0 0.063W	AA
R851	VRS-CZ1JF000J	J	0 0.063W	AA
R855	VRS-CZ1JF000J	J	0 0.063W	AA
R891	VRS-CZ1JF000J	J	0 0.063W	AA

Ref. No.	Part No.	★	Description	Code
R1421	VRS-CZ1JF000J	J	0 0.063W	AA
R1446	VRS-CZ1JF000J	J	0 0.063W	AA
R1467	VRS-CZ1JF000J	J	0 0.063W	AA
R1468	VRS-CZ1JF000J	J	0 0.063W	AA
R1813	VRS-CZ1JF000J	J	0 0.063W	AA
R1814	VRS-CZ1JF000J	J	0 0.063W	AA
R1823	VRS-CZ1JF000J	J	0 0.063W	AA
R1838	VRS-CZ1JF000J	J	0 0.063W	AA
R1863	VRS-CZ1JF000J	J	0 0.063W	AA
R2433	VRS-CZ1JF000J	J	0 0.063W	AA
R2613	VRS-CZ1JF000J	J	0 0.063W	AA
R466	VRS-CZ1JF122J	J	1.2k 0.063W	AA
R1405	VRS-CZ1JF122J	J	1.2k 0.063W	AA
R1609	VRS-CZ1JF122J	J	1.2k 0.063W	AA
R6407	VRS-CZ1JF122J	J	1.2k 0.063W	AA
R468	VRS-CZ1JF391J	J	390 0.063W	AA
R472	VRS-CZ1JF151J	J	150 0.063W	AA
R474	VRS-CZ1JF151J	J	150 0.063W	AA
R1886	VRS-CZ1JF151J	J	150 0.063W	AA
R483	VRS-CZ1JF683J	J	68k 0.063W	AA
R870	VRS-CZ1JF683J	J	68k 0.063W	AA
R871	VRS-CZ1JF683J	J	68k 0.063W	AA
R1808	VRS-CZ1JF683J	J	68k 0.063W	AA
R499	VRS-CZ1JF393J	J	39k 0.063W	AA
R803	VRS-CZ1JF393J	J	39k 0.063W	AA
R812	VRS-CZ1JF393J	J	39k 0.063W	AA
R814	VRS-CZ1JF393J	J	39k 0.063W	AA
R830	VRS-CZ1JF393J	J	39k 0.063W	AA
R833	VRS-CZ1JF393J	J	39k 0.063W	AA
R845	VRS-CZ1JF393J	J	39k 0.063W	AA
R846	VRS-CZ1JF393J	J	39k 0.063W	AA
R885	VRS-CZ1JF393J	J	39k 0.063W	AA
R1804	VRS-CZ1JF393J	J	39k 0.063W	AA
R605	VRS-CZ1JF473J	J	47k 0.063W	AA
R732	VRS-CZ1JF473J	J	47k 0.063W	AA
R813	VRS-CZ1JF473J	J	47k 0.063W	AA
R867	VRS-CZ1JF473J	J	47k 0.063W	AA
R884	VRS-CZ1JF473J	J	47k 0.063W	AA
R904	VRS-CZ1JF473J	J	47k 0.063W	AA
R964	VRS-CZ1JF473J	J	47k 0.063W	AA
R965	VRS-CZ1JF473J	J	47k 0.063W	AA
R1429	VRS-CZ1JF473J	J	47k 0.063W	AA
R1452	VRS-CZ1JF473J	J	47k 0.063W	AA
R2403	VRS-CZ1JF473J	J	47k 0.063W	AA
R2603	VRS-CZ1JF473J	J	47k 0.063W	AA
R4403	VRS-CZ1JF473J	J	47k 0.063W	AA
R611	VRS-CZ1JF155J	J	1.5M 0.063W	AA
R614	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R731	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R915	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R919	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R1428	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R1440	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R1451	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R3406	VRS-CZ1JF152J	J	1.5k 0.063W	AA
R3407	VRS-CZ1JF152J	J	1.5k 0.063W	AA

Ref. No.	Part No.	★	Description		Code
R4402	VRS-CZ1JF152J	J	1.5k	0.063W	AA
R615	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R627	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R629	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R725	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R983	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R2425	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R2429	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R2608	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R2609	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R3415	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R4425	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R6414	VRS-CZ1JF682J	J	6.8k	0.063W	AA
R621	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R759	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R831	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R1605	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R2601	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R4424	VRS-CZ1JF822J	J	8.2k	0.063W	AA
R623	VRS-CZ1JF104J	J	100k	0.063W	AA
R716	VRS-CZ1JF104J	J	100k	0.063W	AA
R717	VRS-CZ1JF104J	J	100k	0.063W	AA
R718	VRS-CZ1JF104J	J	100k	0.063W	AA
R719	VRS-CZ1JF104J	J	100k	0.063W	AA
R720	VRS-CZ1JF104J	J	100k	0.063W	AA
R721	VRS-CZ1JF104J	J	100k	0.063W	AA
R728	VRS-CZ1JF104J	J	100k	0.063W	AA
R750	VRS-CZ1JF104J	J	100k	0.063W	AA
R751	VRS-CZ1JF104J	J	100k	0.063W	AA
R752	VRS-CZ1JF104J	J	100k	0.063W	AA
R753	VRS-CZ1JF104J	J	100k	0.063W	AA
R772	VRS-CZ1JF104J	J	100k	0.063W	AA
R788	VRS-CZ1JF104J	J	100k	0.063W	AA
R789	VRS-CZ1JF104J	J	100k	0.063W	AA
R875	VRS-CZ1JF104J	J	100k	0.063W	AA
R876	VRS-CZ1JF104J	J	100k	0.063W	AA
R2402	VRS-CZ1JF104J	J	100k	0.063W	AA
R2748	VRS-CZ1JF104J	J	100k	0.063W	AA
R5780	VRS-CZ1JF104J	J	100k	0.063W	AA
R5782	VRS-CZ1JF104J	J	100k	0.063W	AA
R624	VRS-CZ1JF224J	J	220k	0.063W	AA
R902	VRS-CZ1JF224J	J	220k	0.063W	AA
R906	VRS-CZ1JF224J	J	220k	0.063W	AA
R1606	VRS-CZ1JF224J	J	220k	0.063W	AA
R2435	VRS-CZ1JF224J	J	220k	0.063W	AA
R483	VRS-CZ1JF273J	J	27k	0.063W	AA
R628	VRS-CZ1JF273J	J	27k	0.063W	AA
R801	VRS-CZ1JF273J	J	27k	0.063W	AA
R883	VRS-CZ1JF273J	J	27k	0.063W	AA
R1604	VRS-CZ1JF273J	J	27k	0.063W	AA
R3416	VRS-CZ1JF273J	J	27k	0.063W	AA
R3436	VRS-CZ1JF273J	J	27k	0.063W	AA
R3437	VRS-CZ1JF273J	J	27k	0.063W	AA
R4449	VRS-CZ1JF273J	J	27k	0.063W	AA
R6402	VRS-CZ1JF273J	J	27k	0.063W	AA
R638	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R797	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R798	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R799	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R864	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R1439	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R2604	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R2620	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R3412	VRS-CZ1JF272J	J	2.7k	0.063W	AA
R726	VRS-CZ1JF273F	J	27k	0.063W	AA
R733	VRS-CZ1JF123J	J	12k	0.063W	AA
R2602	VRS-CZ1JF123J	J	12k	0.063W	AA
R736	VRS-CZ1JF334J	J	330k	0.063W	AA
R785	VRS-CZ1JF334J	J	330k	0.063W	AA
R821	VRS-CZ1JF334J	J	330k	0.063W	AA
R482	VRS-CZ1JF153J	J	15k	0.063W	AA
R782	VRS-CZ1JF153J	J	15k	0.063W	AA
R783	VRS-CZ1JF153J	J	15k	0.063W	AA
R784	VRS-CZ1JF153J	J	15k	0.063W	AA
R1801	VRS-CZ1JF153J	J	15k	0.063W	AA
R3417	VRS-CZ1JF153J	J	15k	0.063W	AA
R4416	VRS-CZ1JF153J	J	15k	0.063W	AA
R4448	VRS-CZ1JF153J	J	15k	0.063W	AA
R786	VRS-CZ1JF823J	J	82k	0.063W	AA
R858	VRS-CZ1JF823J	J	82k	0.063W	AA
R859	VRS-CZ1JF823J	J	82k	0.063W	AA
R957	VRS-CZ1JF823J	J	82k	0.063W	AA
R961	VRS-CZ1JF823J	J	82k	0.063W	AA
R962	VRS-CZ1JF823J	J	82k	0.063W	AA
R989	VRS-CZ1JF823J	J	82k	0.063W	AA
R1802	VRS-CZ1JF823J	J	82k	0.063W	AA
R2753	VRS-CZ1JF823J	J	82k	0.063W	AA
R800	VRS-CZ1JF363J	J	36k	0.063W	AA
R835	VRS-CZ1JF363J	J	36k	0.063W	AA
R1800	VRS-CZ1JF363J	J	36k	0.063W	AA
R1803	VRS-CZ1JF363J	J	36k	0.063W	AA
R802	VRS-CZ1JF303J	J	30k	0.063W	AA
R808	VRS-CZ1JF303J	J	30k	0.063W	AA
R811	VRS-CZ1JF303J	J	30k	0.063W	AA
R828	VRS-CZ1JF303J	J	30k	0.063W	AA
R3438	VRS-CZ1JF303J	J	30k	0.063W	AA
R804	VRS-CZ1JF163F	J	16k	0.063W	AA
R805	VRS-CZ1JF153F	J	15k	0.063W	AA
R818	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R823	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R872	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R874	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R909	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R911	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R1420	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R4723	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R6499	VRS-CZ1JF105J	J	1.0M	0.063W	AA
R820	VRS-CZ1JF272F	J	2.7k	0.063W	AA
R1895	VRS-CZ1JF272F	J	2.7k	0.063W	AA
R822	VRS-CZ1JF684J	J	680k	0.063W	AA
R824	VRS-CZ1JF271J	J	270	0.063W	AA
R836	VRS-CZ1JF101J	J	100	0.063W	AA

Ref. No.	Part No.	★	Description		Code
R837	VRS-CZ1JF101J	J	100	0.063W	AA
R838	VRS-CZ1JF101J	J	100	0.063W	AA
R854	VRS-CZ1JF101J	J	100	0.063W	AA
R1896	VRS-CZ1JF101J	J	100	0.063W	AA
R3432	VRS-CZ1JF101J	J	100	0.063W	AA
R5789	VRS-CZ1JF101J	J	100	0.063W	AA
R5790	VRS-CZ1JF101J	J	100	0.063W	AA
R848	VRS-CZ1JF563J	J	56k	0.063W	AA
R1911	VRS-CZ1JF563J	J	56k	0.063W	AA
R3435	VRS-CZ1JF563J	J	56k	0.063W	AA
R850	VRS-CY1JF106J	J	10M	0.063W	AA
R853	VRS-CZ1JF471F	J	470	0.063W	AA
R865	VRS-CZ1JF124J	J	120k	0.063W	AA
R1805	VRS-CZ1JF124J	J	120k	0.063W	AA
R877	VRS-CZ1JF223F	J	22k	0.063W	AA
R878	VRS-CZ1JF123F	J	12k	0.063W	AA
R879	VRS-CZ1JF333F	J	33k	0.063W	AA
R881	VRS-CZ1JF564J	J	560k	0.063W	AA
R882	VRS-CZ1JF564J	J	560k	0.063W	AA
R887	VRS-CZ1JF100J	J	10	0.063W	AA
R888	VRS-CZ1JF100J	J	10	0.063W	AA
R898	VRS-CZ1JF331J	J	330	0.063W	AA
R1436	VRS-CZ1JF331J	J	330	0.063W	AA
R1448	VRS-CZ1JF331J	J	330	0.063W	AA
R1464	VRS-CZ1JF331J	J	330	0.063W	AA
R3419	VRS-CZ1JF331J	J	330	0.063W	AA
R3420	VRS-CZ1JF331J	J	330	0.063W	AA
R901	VRS-CZ1JF184J	J	180k	0.063W	AA
R907	VRS-CZ1JF184J	J	180k	0.063W	AA
R903	VRN-CZ1JF472D	J	4.7k	0.063W	AA
R949	VRS-TV1JD471	J	470	0.063W	AA
R924	VRS-TV1JD221	J	220	0.063W	AA
R942	VRN-CZ1JF622D	J	6.2k	0.063W	AA
R947	VRS-TV1JD821J	J	820	0.063W	AA
R950	VRN-CZ1JF203D	J	20k	0.063W	AA
R951	VRN-CZ1JF123D	J	12k	0.063W	AA
R959	VRS-CZ1JF824J	J	820k	0.063W	AA
R966	VRS-CZ1JF824J	J	820k	0.063W	AA
R960	VRS-CZ1JF474J	J	470k	0.063W	AA
R967	VRS-CZ1JF474J	J	470k	0.063W	AA
R963	VRS-TV1JD272J	J	2.7k	0.063W	AA
R980	VRS-CZ1JF363F	J	36k	0.063W	AA
R981	VRN-CZ1JF392D	J	3.9k	0.063W	AA
R987	VRN-CZ1JF392D	J	3.9k	0.063W	AA
R1919	VRN-CZ1JF392D	J	3.9k	0.063W	AA
R986	VRN-CZ1JF621D	J	620	0.063W	AA
R998	VRN-CZ1JF242D	J	2.4K	0.063W	AA
R905	VRN-CZ1JF472D	J	4.7k	0.063W	AA
R908	VRN-CZ1JF472D	J	4.7k	0.063W	AA
R910	VRN-CZ1JF472D	J	4.7k	0.063W	AA
R914	VRN-CZ1JF472D	J	4.7k	0.063W	AA
R913	VRN-CZ1JF682D	J	6.8k	0.063W	AA
R6408	VRN-CZ1JF682D	J	6.8k	0.063W	AA
R921	VRS-TV1JD271J	J	270	0.063W	AA
R922	VRS-TV1JD271J	J	270	0.063W	AA
R923	VRS-TV1JD471J	J	470	0.063W	AA

Ref. No.	Part No.	★	Description		Code
R1444	VRS-CZ1JF221J	J	220	0.063W	AA
R3408	VRS-CZ1JF221J	J	220	0.063W	AA
R3414	VRS-CZ1JF221J	J	220	0.063W	AA
R1445	VRS-CZ1JF621J	J	620	0.063W	AA
R1469	VRS-TV1JD000J	J	0	0.063W	AA
R1601	VRS-TV1JD101J	J	100	0.063W	AA
R1611	VRS-TV1JD101J	J	100	0.063W	AA
R1908	VRS-TV1JD101J	J	100	0.063W	AA
R1602	VRS-TV1JD100J	J	10	0.063W	AA
R1615	VRS-TV1JD5R6J	J	5.6	0.063W	AA
R1616	VRS-TV1JD5R6J	J	5.6	0.063W	AA
R1809	VRS-CZ1JF470J	J	47	0.063W	AA
R1901	VRN-CZ1JF121D	J	120	0.063W	AA
R1902	VRS-CZ1JF1R0J	J	1.0	0.063W	AA
R1903	VRS-CZ1JF1R0J	J	1.0	0.063W	AA
R1907	VRS-TV1JD391J	J	390	0.063W	AA
R1909	VRS-TV1JD681J	J	680	0.063W	AA
R1915	VRN-CZ1JF223D	J	22k	0.063W	AA
R1916	VRS-CZ1JF823F	J	82k	0.063W	AB
R1921	VRS-CZ1JF513F	J	51k	0.063W	AB
R1922	VRN-CZ1JF103D	J	10k	0.063W	AB
R2419	VRN-CZ1JF913D	J	91K	0.063W	AA
R2434	VRS-CZ1JF274J	J	270k	0.063W	AA
R3700	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3701	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3702	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3703	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3704	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3705	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3706	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3707	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3708	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R3709	VRS-CY1JF1R0J	J	1.0	0.063W	AA
R4422	VRS-CZ1JF202J	J	2.0k	0.063W	AA
R4450	VRS-CY1JF335J	J	3.3M	0.063W	AA
R4720	VRS-TV1JD1R0J	J	1.0	0.063W	AA
R4721	VRS-TV1JD1R0J	J	1.0	0.063W	AA
R5783	VRS-CZ1JF114J	J	110k	0.063W	AB
R6410	VRN-CZ1JF102D	J	1.0K	0.063W	AA

MISCELLANEOUS PARTS

	QCNW-1316TAZZ	J	Connecting Cord	
FB900	RBLN-0011TAZZ	J	Balun	AB
FB901	RBLN-0028TAZZ	J	Balun	AB
FB902	RBLN-0028TAZZ	J	Balun	AB
FB903	RBLN-0028TAZZ	J	Balun	AB
FB904	RBLN-0036TAZZ	J	Balun	AB
FB1903	RBLN-0056TAZZ	J	Balun	AC
FB3601	RBLN-0067CEZZ	J	Balun	AC
FB3602	RBLN-0067CEZZ	J	Balun	AC
FB6401	RBLN-0062CEZZ	J	Balun	AC
⚠F900	QFS-L1624TAZZ	J	Fuse	AD
⚠F901	QFS-L1624TAZZ	J	Fuse	AD
⚠F902	QFS-L1624TAZZ	J	Fuse	AD
P36	QPLGN0463TAZZ	J	Plug	AC
P3301	QCNCM7054TAZZ	J	Connector	AL

Ref. No.	Part No.	★	Description	Code
P6401	QCNCM2652TAZZ	J	Connector	AF
SC46	QSOCN1866TAZZ	J	Socket	AE
SC701	QSOCN1365TAZZ	J	Socket	AE
SC702	QSOCN1466TAZZ	J	Socket	AE
SC703	QSOCN1265TAZZ	J	Socket	AD
SC1902	QSOCN0665TAZZ	J	Socket	AD
SC4721	QSOCN1053TAZZ	J	Socket	AF
SC6402	QSOCN1565TAZZ	J	Socket	AE
SC6403	QSOCN1753TAZZ	J	Socket	AF
SLD	PSLDM4458GEFW	J	Shield	

DUNTK4883KE00 MIC AMP P.W.B.

INTEGRATED CIRCUITS

IC6601	VHiNJM4558M-1	J	NJM4558M I.C.	AC

TRANSISTORS

Q6602	VSXP6501//-1	J	Transistor	AB

CAPACITORS

C6601	VCSAPD1CJ105M	J	1.0	16V Tantalum	AC
C6602	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C6615	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C6603	VCSATE1AJ226M	J	22	10V Tantalum	AD
C6604	VCKYCY1HB272K	J	2700p	50V Ceramic	AA
C6605	VCSAPD1DJ474M	J	0.47	20V Tantalum	AD
C6610	VCCCCY1HH331J	J	330p	50V Ceramic	AA
C6611	VCCCCY1HH331J	J	330p	50V Ceramic	AA
C6612	VCCCCY1HH681J	J	680p	25V Ceramic	

RESISTERS

R6601	VRS-CY1JF822J	J	8.2k	0.063W	AA
R6602	VRS-CY1JF123J	J	12k	0.063W	AA
R6603	VRS-CY1JF123J	J	12k	0.063W	AA
R6604	VRS-CY1JF152J	J	1.5k	0.063W	AA
R6605	VRS-CY1JF103J	J	10k	0.063W	AA
R6615	VRS-CY1JF103J	J	10k	0.063W	AA
R6606	VRS-CY1JF472J	J	4.7k	0.063W	AA
R6607	VRS-CY1JF000J	J	0	0.063W	AA
R6612	VRS-CY1JF274F	J	270k	0.063W	AA
R6613	VRS-CY1JF102J	J	1.0k	0.063W	AA
R6614	VRS-CY1JF561J	J	560	0.063W	AA
R6620	VRS-CY1JF474F	J	470K	0.063W	
R6622	VRS-CY1JF474F	J	470K	0.063W	
R6621	VRS-CY1JF563F	J	56K	0.063W	AA
R6623	VRS-CY1JF563F	J	56K	0.063W	AA

MISCELLANEOUS PARTS

P6601	QPLGN0263TAZZ	J	Plug	AB
SC6602	QSOCN0766TAZZ	J	Socket	AD

Ref. No.	Part No.	★	Description	Code

DUNTK4884KE00 CAMERA P.W.B.

INTEGRATED CIRCUITS

IC11	VHiLZ95D72M-1	J	I.C.	AQ
IC12	VHiCXD1267N-1	J	CXD1267N I.C	AR
IC13	VHiNJ79L08U-1	J	NJM79L08UA	AD
IC101	VHiCXA1399Q-1	J	CXA1399Q	AT
IC102	VHiCXA1577R-1	J	CXA1577R I.C.	BB
IC201	RH-iX0224TAZZ	J	I.C.	
IC501	RH-iX0215TAZZ	J	I.C.	BA
IC502	VHiXL24C04F-1	J	I.C.	
IC503	VHiMB8346BV-1	J	MB88346BPFV I.C.	AN
IC504	VHiPST592IM-1	J	IC-PST592IMT	AE
IC505	VHiTCHT707F-1	J	TC74HCT7007AF I.C.	AD
IC506	VHiNJU4066V-1	J	NJU4066BV I.C	AE
IC1501	VHiMM1262XQ-1	J	I.C.	

TRANSISTORS

Q11	VSUMZ1////-1	J	Transistor	AB
Q101	VSUMZ1////-1	J	Transistor	AB
Q202	VSUMZ1////-1	J	Transistor	AB
Q503	VSUMZ1////-1	J	Transistor	AB
Q102	VS2SC4617B/-1	J	Transistor	AA
Q201	VS2SC4617B/-1	J	Transistor	AA
Q203	VS2SC4617B/-1	J	Transistor	AA
Q205	VS2SC4617B/-1	J	Transistor	AA
Q501	VS2SC4617B/-1	J	Transistor	AA
Q1503	VS2SC4617B/-1	J	Transistor	AA
Q204	VSUMX2////-1	J	Transistor	AB
Q1501	VS2SB1132Q/-1	J	Transistor	AC
Q1502	VS2SB1132Q/-1	J	Transistor	AC
Q1504	VSUMT2////-1	J	Transistor	AB
Q1505	VSUMD2////-1	J	Transistor	AC
Q1506	VSUMD2////-1	J	Transistor	AC

DIODES

D11	VHDDA121//-1	J	Diode	AA
D12	VHDDA121//-1	J	Diode	AA
D13	VHDDA121//-1	J	Diode	AA
D16	VHDDA121//-1	J	Diode	AA
D17	VHDDA121//-1	J	Diode	AA
D14	VHDDAN222//-1	J	Diode	AA
D502	VHDDAN222//-1	J	Diode	AA
D15	RH-EX0152TAZZ	J	Zener Diode	AB
D501	VHDDAP222//-1	J	Diode	AA

PACKAGE CIRCUIT

X11	RCRSZ0008TAZZ	J	Crystal	AR

Ref. No.	Part No.	★	Description		Code
	COIL AND TRANSFORMERS				
CF501	RFILC0056TAZZ	J	Filter		AE
FL11	RFILN0002TAZZ	J	Filter		AF
FL12	RFILN0002TAZZ	J	Filter		AF
FL13	RFILN0002TAZZ	J	Filter		AF
L11	VPABM1R0JR82N	J	Peaking	1μH	AC
L101	VPAEM100K1R3N	J	Peaking	10μH	AC
L102	VPAEM100K1R3N	J	Peaking	10μH	AC
L201	VPAEM100K1R3N	J	Peaking	10μH	AC
L202	VPAEM100K1R3N	J	Peaking	10μH	AC
L204	VPAEM100K1R3N	J	Peaking	10μH	AC
L205	VPAEM100K1R3N	J	Peaking	10μH	AC
L501	VPAEM100K1R3N	J	Peaking	10μH	AC
L502	VPAEM100K1R3N	J	Peaking	10μH	AC
L203	VP-NM101K4R2N	J	Peaking	100μH	AC
L206	VPAEM680K6R9N	J	Peaking	68μH	AC
	CAPACITORS				
C11	VCKYTV1EB104K	J	0.1	25V Ceramic	AB
C12	VCEAPE1HW105M	J	1.0	50V Electrolytic	AB
C111	VCEAPE1HW105M	J	1.0	50V Electrolytic	AB
C13	VCKYTV1HF104Z	J	0.1	50V Ceramic	AA
C14	VCKYTV1HF104Z	J	0.1	50V Ceramic	AA
C15	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C112	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C113	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C204	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C207	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C216	VCEAPE1CW475M	J	4.7	16V Electrolytic	AB
C16	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C20	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C31	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C38	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C101	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C102	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C109	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C110	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C115	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C116	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C117	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C118	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C119	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C122	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C222	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C225	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C503	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C506	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C507	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C508	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C509	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C1521	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C1523	VCKYCY1HF103Z	J	0.01	50V Ceramic	AA
C17	VCKYCY1EF104Z	J	0.1	25V Ceramic	AA
C22	VCKYCY1EF104Z	J	0.1	25V Ceramic	AA
C26	VCKYCY1EF104Z	J	0.1	25V Ceramic	AA
C27	VCKYCY1EF104Z	J	0.1	25V Ceramic	AA
C18	VCSATC1VJ685M	J	6.8	35V Tantalum	AF
C19	VCKYTV1EF224Z	J	0.22	25V Ceramic	AA
C21	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C28	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C107	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C108	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C114	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C120	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C205	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C206	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C208	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C211	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C212	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C215	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C229	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C502	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C504	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C505	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C1515	VCKYCY1CF104Z	J	0.1	16V Ceramic	AA
C23	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C29	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C37	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C40	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C224	VCKYCY1HB102K	J	1000p	50V Ceramic	AA
C24	VCKYTV1CF105Z	J	1.0	16V Ceramic	AB
C30	VCSATA1AJ106M	J	10	10V Tantalum	AC
C106	VCSATA1AJ106M	J	10	10V Tantalum	AC
C32	VCCCCY1HH470J	J	47p	50V Ceramic	AA
C33	VCCCCY1HH470J	J	47p	50V Ceramic	AA
C34	VCCCCY1HH470J	J	47p	50V Ceramic	AA
C35	VCCCCY1HH470J	J	47p	50V Ceramic	AA
C36	VCCCCY1HH6R0D	J	6.0p	50V Ceramic	AA
C39	VCSATA1AJ475M	J	4.7	10V Tantalum	AC
C103	VCKYCY1EB223K	J	0.022	25V Ceramic	AA
C104	VCKYTQ1CB105K	J	1.0	16V Ceramic	AC
C105	VCKYTQ1CB105K	J	1.0	16V Ceramic	AC
C121	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C210	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C213	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C501	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C1516	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C1524	VCEAPE0JW106M	J	10	6.3V Electrolytic	AB
C209	VCKYCY1HB222K	J	2200p	50V Ceramic	AA
C214	VCKYCY1HB222K	J	2200p	50V Ceramic	AA
C217	VCSATA0JJ156M	J	15	6.3V Tantalum	AC
C218	VCCCCY1HH270J	J	27p	50V Ceramic	AA
C219	VCCCCY1HH220J	J	22p	50V Ceramic	AA
C220	VCCCCY1HH100D	J	10p	50V Ceramic	AA
C228	VCCCCY1HH100D	J	10p	50V Ceramic	AA
C221	VCCCCY1HH680J	J	68p	50V Ceramic	AA
C223	RC-EZ0244TAZZ	J			AB
C226	VCCCCY1HH101J	J	100p	50V Ceramic	AA
C227	VCCCCY1HH150J	J	15p	50V Ceramic	AA
C1507	VCEAPE1AW156M	J	15	10V Electrolytic	AC

Ref. No.	Part No.	★	Description		Code
C1513	VCEAPE1AW156M	J	15	10V Electrolytic	
C1517	VCCCCY1HH121J	J	120p	50V Ceramic	AA
C1519	VCCCCY1HH121J	J	120p	50V Ceramic	AA
C1518	VCKYCY1HB332K	J	3300p	50V Ceramic	AA
C1520	VCKYCY1HB122K	J	1200p	50V Ceramic	AA
C1522	VCKYCY1CF224Z	J	0.22	16V Ceramic	AA

RESISTERS

R11	VRS-CY1JF105J	J	1.0M	0.063W	AA
R27	VRS-CY1JF105J	J	1.0M	0.063W	AA
R517	VRS-CY1JF105J	J	1.0M	0.063W	AA
R1524	VRS-CY1JF105J	J	1.0M	0.063W	AA
R12	VRS-CY1JF104J	J	100k	0.063W	AA
R15	VRS-CY1JF104J	J	100k	0.063W	AA
R16	VRS-CY1JF104J	J	100k	0.063W	AA
R13	VRS-CY1JF224J	J	220k	0.063W	AA
R14	VRS-CY1JF392J	J	3.9k	0.063W	AA
R1510	VRS-CY1JF392J	J	3.9k	0.063W	AA
R1511	VRS-CY1JF392J	J	3.9k	0.063W	AA
R17	VRS-CY1JF123F	J	12k	0.063W	AA
R18	VRS-CY1JF222F	J	2.2k	0.063W	AA
R19	VRS-CY1JF153J	J	15k	0.063W	AA
R1501	VRS-CY1JF153J	J	15k	0.063W	AA
R20	VRS-CY1JF561J	J	560	0.063W	AA
R26	VRS-CY1JF561J	J	560	0.063W	AA
R21	VRS-CY1JF162J	J	1.6k	0.063W	AA
R22	VRS-CY1JF103J	J	10k	0.063W	AA
R44	VRS-CY1JF103J	J	10k	0.063W	AA
R210	VRS-CY1JF103J	J	10k	0.063W	AA
R211	VRS-CY1JF103J	J	10k	0.063W	AA
R216	VRS-CY1JF103J	J	10k	0.063W	AA
R217	VRS-CY1JF103J	J	10k	0.063W	AA
R504	VRS-CY1JF103J	J	10k	0.063W	AA
R510	VRS-CY1JF103J	J	10k	0.063W	AA
R514	VRS-CY1JF103J	J	10k	0.063W	AA
R528	VRS-CY1JF103J	J	10k	0.063W	AA
R1509	VRS-CY1JF103J	J	10k	0.063W	AA
R1513	VRS-CY1JF103J	J	10k	0.063W	AA
R1527	VRS-CY1JF103J	J	10k	0.063W	AA
R1529	VRS-CY1JF103J	J	10k	0.063W	AA
R23	VRS-CY1JF102J	J	1.0k	0.063W	AA
R209	VRS-CY1JF102J	J	1.0k	0.063W	AA
R229	VRS-CY1JF102J	J	1.0k	0.063W	AA
R233	VRS-CY1JF102J	J	1.0k	0.063W	AA
R235	VRS-CY1JF102J	J	1.0k	0.063W	AA
R236	VRS-CY1JF102J	J	1.0k	0.063W	AA
R503	VRS-CY1JF102J	J	1.0k	0.063W	AA
R507	VRS-CY1JF102J	J	1.0k	0.063W	AA
R513	VRS-CY1JF102J	J	1.0k	0.063W	AA
R518	VRS-CY1JF102J	J	1.0k	0.063W	AA
R530	VRS-CY1JF102J	J	1.0k	0.063W	AA
R532	VRS-CY1JF102J	J	1.0k	0.063W	AA
R536	VRS-CY1JF102J	J	1.0k	0.063W	AA
R24	VRS-CA1JF102J	J	1.0k	0.063W	AA
R531	VRS-CA1JF102J	J	1.0k	0.063W	AA
R25	VRS-CY1JF101J	J	100	0.063W	AA
R35	VRS-CY1JF101J	J	100	0.063W	AA
R36	VRS-CY1JF101J	J	100	0.063W	AA
R107	VRS-CY1JF101J	J	100	0.063W	AA
R533	VRS-CY1JF101J	J	100	0.063W	AA
R534	VRS-CY1JF101J	J	100	0.063W	AA
R535	VRS-CY1JF101J	J	100	0.063W	AA
R32	VRK-SA1JF330J	J	33	0.063W	AB
R34	VRS-CY1JF222J	J	2.2k	0.063W	AA
R105	VRS-CY1JF222J	J	2.2k	0.063W	AA
R529	VRS-CY1JF222J	J	2.2k	0.063W	AA
R1516	VRS-CY1JF222J	J	2.2k	0.063W	AA
R38	VRS-CY1JF330J	J	033	0.063W	AA
R40	VRS-CY1JF000J	J	0	0.063W	AA
R41	VRS-CY1JF000J	J	0	0.063W	AA
R201	VRS-CY1JF000J	J	0	0.063W	AA
R206	VRS-CY1JF000J	J	0	0.063W	AA
R208	VRS-CY1JF000J	J	0	0.063W	AA
R522	VRS-CY1JF000J	J	0	0.063W	AA
R524	VRS-CY1JF000J	J	0	0.063W	AA
R525	VRS-CY1JF000J	J	0	0.063W	AA
R101	VRS-CY1JF153F	J	15k	0.063W	AA
R1507	VRS-CY1JF153F	J	15k	0.063W	AA
R102	VRS-CY1JF244F	J	240k	0.063W	AA
R1508	VRS-CY1JF244F	J	240k	0.063W	AA
R103	VRS-CY1JF272J	J	02.7k	0.063W	AA
R212	VRS-CY1JF272J	J	02.7k	0.063W	AA
R104	VRS-CY1JF223J	J	22k	0.063W	AA
R505	VRS-CY1JF223J	J	22k	0.063W	AA
R509	VRS-CY1JF223J	J	22k	0.063W	AA
R511	VRS-CY1JF223J	J	22k	0.063W	AA
R512	VRS-CY1JF223J	J	22k	0.063W	AA
R515	VRS-CY1JF223J	J	22k	0.063W	AA
R527	VRS-CY1JF223J	J	22k	0.063W	AA
R1514	VRS-CY1JF223J	J	22k	0.063W	AA
R1515	VRS-CY1JF223J	J	22k	0.063W	AA
R106	VRS-CY1JF391J	J	390	0.063W	AA
R1519	VRS-CY1JF391J	J	390	0.063W	AA
R108	VRS-CY1JF152J	J	1.5k	0.063W	AA
R220	VRS-CY1JF152J	J	1.5k	0.063W	AA
R223	VRS-CY1JF152J	J	1.5k	0.063W	AA
R224	VRS-CY1JF152J	J	1.5k	0.063W	AA
R238	VRS-CY1JF152J	J	1.5k	0.063W	AA
R239	VRS-CY1JF152J	J	1.5k	0.063W	AA
R109	VRS-CY1JF822J	J	8.2k	0.063W	AA
R110	VRS-CY1JF121J	J	120	0.063W	AA
R1517	VRS-CY1JF121J	J	120	0.063W	AA
R1518	VRS-CY1JF121J	J	120	0.063W	AA
R111	VRS-CY1JF470J	J	47	0.063W	AA
R112	VRS-CY1JF220J	J	22	0.063W	AA
R113	VRS-CY1JF220J	J	22	0.063W	AA
R213	VRS-CY1JF471J	J	470	0.063W	AA
R215	VRS-CY1JF471J	J	470	0.063W	AA
R1520	VRS-CY1JF471J	J	470	0.063W	AA
R214	VRS-CY1JF473J	J	47k	0.063W	AA
R219	VRS-CY1JF473J	J	47k	0.063W	AA

Ref. No.	Part No.	★	Description	Code
R227	VRS-CY1JF473J	J	47k 0.063W	AA
R228	VRS-CY1JF473J	J	47k 0.063W	AA
R232	VRS-CY1JF473J	J	47k 0.063W	AA
R234	VRS-CY1JF473J	J	47k 0.063W	AA
R218	VRS-CY1JF273J	J	27k 0.063W	AA
R221	VRS-CY1JF911J	J	910 0.063W	AA
R222	VRS-CY1JF911J	J	910 0.063W	AA
R225	VRS-CY1JF911J	J	910 0.063W	AA
R226	VRS-CY1JF911J	J	910 0.063W	AA
R231	VRS-CY1JF221J	J	220 0.063W	AA
R237	VRS-CY1JF332J	J	3.3k 0.063W	AA
R1526	VRS-CY1JF332J	J	3.3k 0.063W	AA
R501	VRS-CB1JF102J	J	1.0k 0.063W	AA
R502	VRS-CB1JF102J	J	1.0k 0.063W	AA
R506	VRS-CB1JF102J	J	1.0k 0.063W	AA
R508	VRS-CY1JF182J	J	1.8k 0.063W	AA
R516	VRS-CA1JF223J	J	22k 0.063W	AA
R526	VRS-CA1JF223J	J	22k 0.063W	AA
R519	VRS-CY1JF183J	J	18k 0.063W	AA
R520	VRS-CY1JF183J	J	18k 0.063W	AA
R1505	VRS-CY1JF183J	J	18k 0.063W	AA
R1528	VRS-CY1JF183J	J	18k 0.063W	AA
R1530	VRS-CY1JF183J	J	18k 0.063W	AA
R537	VRS-CY1JF562J	J	5.6k 0.063W	AA
R1502	VRS-CY1JF562J	J	5.6k 0.063W	AA
R1504	VRS-CY1JF562J	J	5.6k 0.063W	AA
R1503	VRS-CY1JF821J	J	820 0.063W	AA
R1506	VRS-CY1JF821J	J	820 0.063W	AA
R1512	VRS-CY1JF180J	J	18 0.063W	AA
R1523	VRS-CY1JF682J	J	6.8k 0.063W	AA
R1525	VRS-CY1JF682J	J	6.8k 0.063W	AA

MISCELANEOUS PARTS

FB11	RBLN-0062CEZZ	J	Balun	AC
FB501	RBLN-0006TAZZ	J	Balun	AB
FB502	RBLN-0006TAZZ	J	Balun	AB
FB503	RBLN-0006TAZZ	J	Balun	AB
FB504	RBLN-0006TAZZ	J	Balun	AB
FB505	RBLN-0067CEZZ	J	Balun	AC
FB506	RBLN-0059CEZZ	J	Balun	AB
P6	QPLGN0264TAZZ	J	Plug	AC
P7	QPLGN0263TAZZ	J	Plug	AB
P8	QCNCM3052TAZZ	J	Connector	AF
SC2	QSOCN1665TAZZ	J	Socket	AE
SC3	QSOCN1347TAZZ	J	Socket	AF
SC4	QSOCN1466TAZZ	J	Socket	AE
SC5	QSOCN0467TAZZ	J	Socket	AC
SC9	QSOCN2465TAZZ	J	Socket	AE
SLD3	PSLDM3191TAFW	J	Shield	
SLD4	PSLDM3192TAFW	J	Shield	

Ref. No.	Part No.	★	Description	Code

OTHERS PARTS

	SPAKC6376TAZZ	J	Packing Case(VL-E31S)	
	SPAKC6377TAZZ	J	Packing Case(VL-E31H)	
	SPAKC6378TAZZ	J	Packing Case(VL-E31X)	
	SPAKC6379TAZZ	J	Packing Case(VL-E17E)	
	SPAKP6049TAZZ	J	Wrapping Paper	AC
	TINSL0032TAZZ	J	Instruction Book(VL-E31S)	
	TINSE0160TAZZ	J	Instruction Book(VL-E31H)	
	TINSE0161TAZZ	J	Instruction Book(VL-E31X)	
	TINSZ1381TAZZ	J	Instruction Book(VL-E17E)	
	RRMCG0022TASA	J	Infrared R/C	
	RMICC0053TAZZ	J	Microphone	AS
	QCNW-1140TA00	J	DC Cable	AU
	QCNW-1295TAZZ	J	AV Cable	
	PNNOK0003TAZZ	J	Cleaning Cloth	AG
	UBATL0004TAZZ	J	Lithium Battery	AF
	VSP0028P-31WN	J	Speaker	AM
	QPLGA0007GEZZ	J	AC Plug(VL-E17Eonly)	AH
	93GR1038710010	J	Infrared R/C Battery Cover	

RAMP-0003TAN1 HEAD AMP UNIT

INTEGRATED CIRCUITS

IC301	VHIM52369FP-1	AR
IC302	VHILE93C46T-1	AF

TRANSISTORS

Q301	VSDTA114EE/-1	AB
Q302	VS2SC3931C/-1	AB
Q303	VS2SC3931C/-1	AB
Q304	VSXP6501///-1	AB
Q307	VS2SC4738Y/-1	AA
Q309	VSXP6501///-1	AB
Q310	VS2SC4738Y/-1	AA
Q311	VS2SA1037KQ-1	AA
Q312	VS2SA1037KQ-1	AA
Q313	VSDTC144EE/-1	AA
Q315	VSUMG2/////-1	AC

DIODES

D301	VHDMA132WA/-1	AA

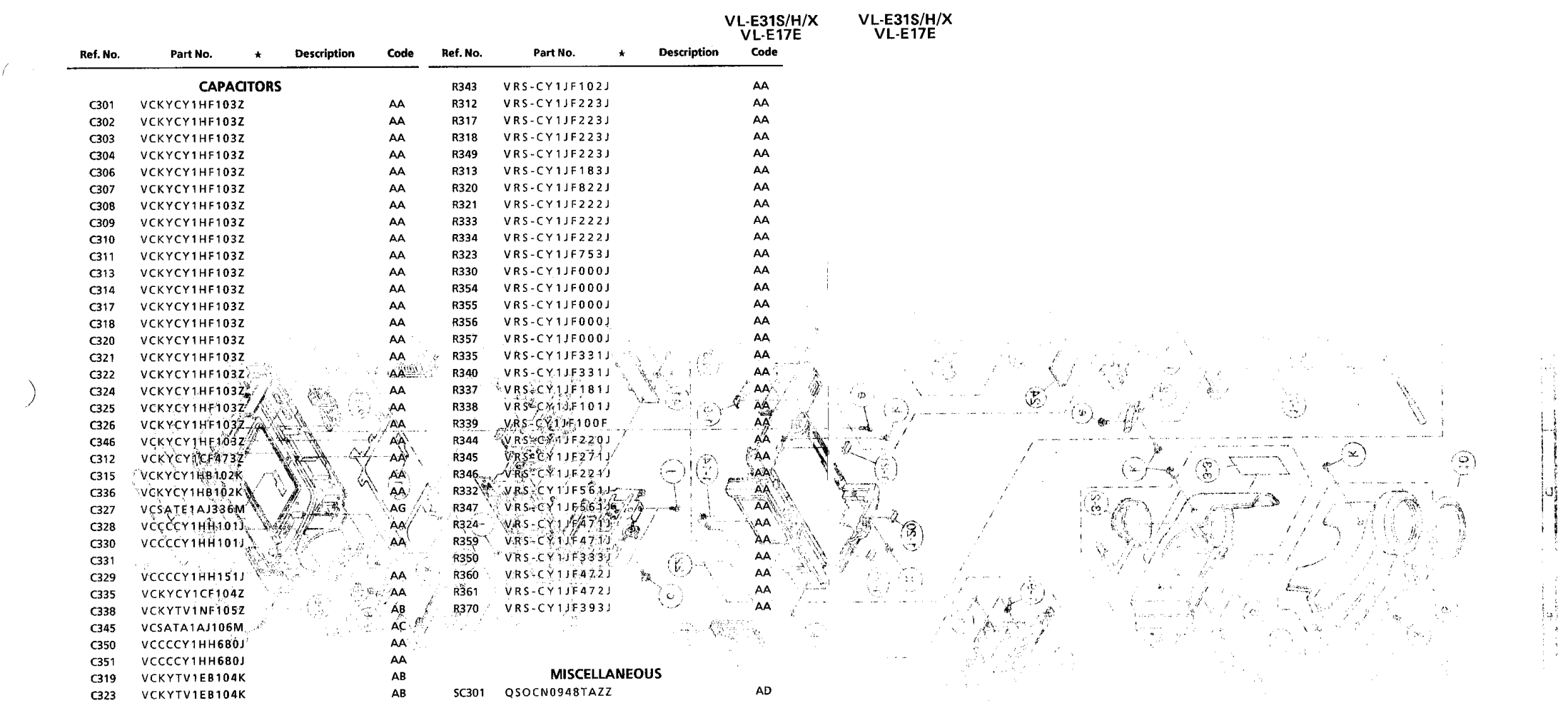
COILS AND TRANSFORMER

L301	VPABM100J2R6N	AC
L302	VPABM101J160N	AC
L303	VP-NM220K1RON	AB
L304	VP-NM220K1RON	AB

VL-E31S/H/X
VL-E17E

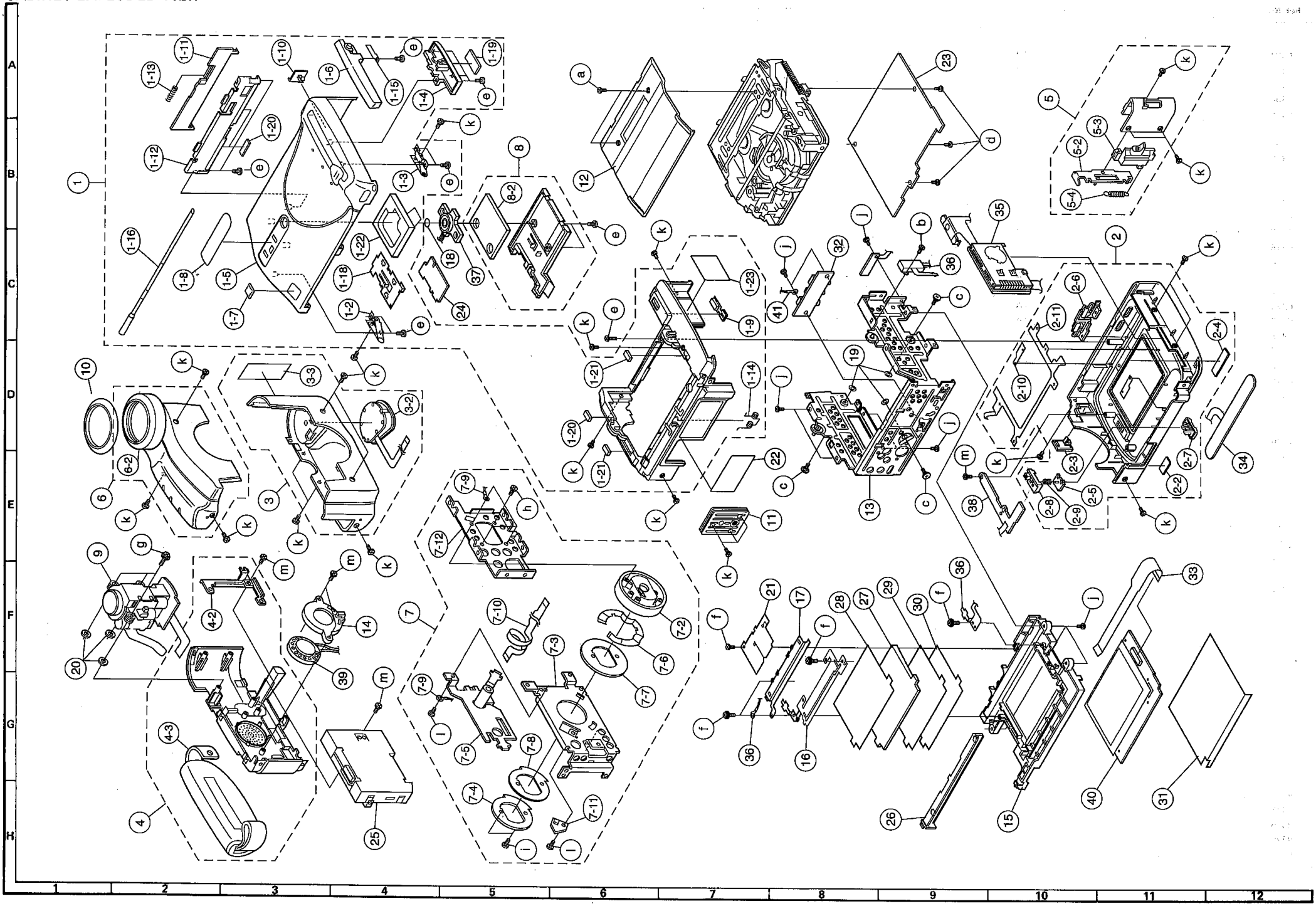
Ref. No.	Part No.	★	Description	Code
	CAPACITORS			
C301	VCKYCY1HF103Z			AA
C302	VCKYCY1HF103Z			AA
C303	VCKYCY1HF103Z			AA
C304	VCKYCY1HF103Z			AA
C306	VCKYCY1HF103Z			AA
C307	VCKYCY1HF103Z			AA
C308	VCKYCY1HF103Z			AA
C309	VCKYCY1HF103Z			AA
C310	VCKYCY1HF103Z			AA
C311	VCKYCY1HF103Z			AA
C313	VCKYCY1HF103Z			AA
C314	VCKYCY1HF103Z			AA
C317	VCKYCY1HF103Z			AA
C318	VCKYCY1HF103Z			AA
C320	VCKYCY1HF103Z			AA
C321	VCKYCY1HF103Z			AA
C322	VCKYCY1HF103Z			AA
C324	VCKYCY1HF103Z			AA
C325	VCKYCY1HF103Z			AA
C326	VCKYCY1HF103Z			AA
C346	VCKYCY1HF103Z			AA
C312	VCKYCY1CF473Z			AA
C315	VCKYCY1HB102K			AA
C336	VCKYCY1HB102K			AA
C327	VCSATE1AJ336M			AG
C328	VCCCCY1HH101J			AA
C330	VCCCCY1HH101J			AA
C331				
C329	VCCCCY1HH151J			AA
C335	VCKYCY1CF104Z			AA
C338	VCKYTV1NF105Z			AB
C345	VCSATA1AJ106M			AC
C350	VCCCCY1HH680J			AA
C351	VCCCCY1HH680J			AA
C319	VCKYTV1EB104K			AB
C323	VCKYTV1EB104K			AB
C332	VCKYTV1EB104K			AB
	RESISTORS			
R301	VRS-CY1JF562J			AA
R305	VRS-CY1JF562J			AA
R309	VRS-CY1JF562J			AA
R362	VRS-CY1JF562J			AA
R303	VRS-CY1JF154J			AA
R304	VRS-CY1JF563J			AA
R307	VRS-CY1JF563J			AA
R308	VRS-CY1JF563J			AA
R306	VRS-CY1JF102J			AA
R319	VRS-CY1JF102J			AA
R325	VRS-CY1JF102J			AA
R326	VRS-CY1JF102J			AA
R329	VRS-CY1JF102J			AA
R331	VRS-CY1JF102J			AA

Ref. No.	Part No.	★	Description	Code
R343	VRS-CY1JF102J			AA
R312	VRS-CY1JF223J			AA
R317	VRS-CY1JF223J			AA
R318	VRS-CY1JF223J			AA
R349	VRS-CY1JF223J			AA
R313	VRS-CY1JF183J			AA
R320	VRS-CY1JF822J			AA
R321	VRS-CY1JF222J			AA
R333	VRS-CY1JF222J			AA
R334	VRS-CY1JF222J			AA
R323	VRS-CY1JF753J			AA
R330	VRS-CY1JF000J			AA
R354	VRS-CY1JF000J			AA
R355	VRS-CY1JF000J			AA
R356	VRS-CY1JF000J			AA
R357	VRS-CY1JF000J			AA
R335	VRS-CY1JF331J			AA
R340	VRS-CY1JF331J			AA
R337	VRS-CY1JF181J			AA
R338	VRS-CY1JF101J			AA
R339	VRS-CY1JF100F			AA
R344	VRS-CY1JF220J			AA
R345	VRS-CY1JF271J			AA
R346	VRS-CY1JF221J			AA
R332	VRS-CY1JF561J			AA
R347	VRS-CY1JF561J			AA
R324	VRS-CY1JF471J			AA
R359	VRS-CY1JF471J			AA
R350	VRS-CY1JF333J			AA
R360	VRS-CY1JF472J			AA
R361	VRS-CY1JF472J			AA
R370	VRS-CY1JF393J			AA
	MISCELLANEOUS			
SC301	QSOCN0948TAZZ			AD
SC302	QSOCN1865TAZZ			AE
SC303	QSOCN1865TAZZ			AE
SC304	QSOCN0665TAZZ			AD
SC305	QCNCW7054TAZZ			AL
	PSLDM4456GEFW		Shild Case	AF



VL-E31S/H/X
VL-E17E

CABINET EXPLODED VIEW



CABINET PARTS LIST

★ MARK: SPARE PARTS DELIVERY SECTION

Ref. No.	Part No.	★	Description	Code
1	CCABA6109TA01		VCR Cabinet Ass'y (VL-E31S/H/X)	BB
1	CCABA6109TA03		VCR Cabinet Ass'y (VL-E17E)	BB
1-2	CANGK0297TA01		Stay L Ass'y	AK
1-3	CANGK0297TA02		Stay R Ass'y	AK
1-4	GCOVA1311TASA		Stand Cover	AC
1-5	GFTAC1129TASA		VCR Lid (VL-E31S/H/X)	AQ
1-5	GFTAC1126TASA		VCR Lid (VL-E17E)	AQ
1-6	GLEGP0008TASA		Stand	AE
1-7	HBDGS0056TASA		LCD Batch	AD
1-8	HDECB0226TASA		Microphone Decoration Plate	AE
1-9	JBTN-0226TASA		EJECT Button	AD
1-10	JKNBP0096TASA		VCR Lid Open Button	AC
1-11	LHLDZ1223TA00		VCR Lid Lock	AD
1-12	LHLDZ1224TA00		VCR Lid Lock Holder	AD
1-13	MSPRC0059TAFJ		VCR Lid Lock Spring	AA
1-14	MSPRD0023TAFF		VCR Lid Spring	AD
1-15	MSPRP0116TAFJ		Stand Plate Spring	AC
1-16	NSFTZ0024TASA		VCR Lid Axle	AC
1-18	PSLDM9044TAFJ		Microphone Shild Plate	AC
1-19	PSPAG0065TA00		VCR Lid Cusion A	AA
1-20	PSPAG0066TA00		VCR Lid Cusion B	AA
1-21	PSPAZ0087TA00		Stay Cusion	AA
1-22	PSPAZ0098TAZZ		Microphone Cusion A	AC
1-23	TLABH0186TAZZ		Battery Label	AB
2	DCABB6109TA01		LCD Cabinet Ass'y	AV
2-2	GCOVA1310TASA		Remote Control Receptor Cover	AC
2-3	GFTAS1003TASA		Lamp Exchange Lid	AC
2-4	HBDGB0036TASA		SHARP Batch	AD
2-5	JBTN-0239TASA		Power Lock Button	AE
2-6	JBTN-0225TASA		Menu Button	AC
2-7	JKNBP0095TASA		Power Knob	AC
2-8	LHLDZ1211TAZZ		Power Knob Holder	AB
2-9	MSPRC0050TAFJ		Power Lock Spring	AA
2-10	PCOVU9020TAZZ		Light Shild Cover A	AB
2-11	QEARP0159TAFJ		LCD Earth Plate	AD
3	CCABC6034TA01		Camera Cabinet C Ass'y	AV
3-2	QSW-Z0100TAZZ		Zoom S/S Unit	AQ
3-3	TLABH0168TAZZ		Lithium Replacement Label	AA
4	DCABD6034TA01		Camera Cabinet D Ass'y	AU
4-2	LANGT0445TAFW		Camera Cabinet Fitting	AD
4-3	UBNDT0071TASA		Hand Strap	AM
5	CCASP0056TAK2		Battery Lock Case Ass'y	AM
5-2	LANGK0298TA00		Battery Lock Fitting	AE
5-3	MLEVP0011TASA		Battery Lock Cancel Lever	AC
5-4	MSPRT0022TAFJ		Battery Lock Spring	AA
6	CCOVA1309TA01		Front Cover Ass'y	AR
6-2	GCOVA1313TASA		Front Cover Ring	AE
7	CANGF0290TA01		Tilt Ass'y	AZ
7-2	GDAI-3048TASA		Tilt Rotation Axle	AL
7-3	LANGF0291TAFW		Tilt Rotation Section Fitting	AF
7-4	LANGH0053TAFW		Tilt Positioning Plate	AC
7-5	LHLDW1029TAZZ		Tilt FPC Holder	AD
7-6	MSPRP0110TAFW		Tilt Plate Spring	AD
7-7	PSPAZ0073TAZZ		Tilt Rotation Section Spacer A	AB
7-8	PSPAZ0090TAZZ		Tilt Rotation Section Spacer B	AD
7-9	QCNW-1302TAZZ		Tilt Earth	AC
7-10	QPWBH2456TAZZ		Tilt FPC	
7-11	QSW-Z0099TAZZ		LCD Inversion Switch	AH
7-12	LANGF0290TAFW		Tilt Main Side Fitting	
8	CCOVA1312TA01		Microphone Cover Ass'y	AE
8-2	PSPAZ0089TA00		Microphene Cusion B	AC
9	CLNSA0118TA03		Lens	BS
10	GCOVH1128TASA		Lens Cover	AS
11	GDAI-1038TASA		Tri Pod	AF
12	GFTAC1125TASA		Cassette Control Lid	AF
13	LANGF0292TAZZ		MH Frame	AN
14	LHLDZ1214TAZZ		Speaker Holder	AB
15	LHLDZ1225TAZZ		LCD Holder	AF
16	MSPRP0117TAFJ		Light Guide Plate Retaining Sheet Spring	AE
17	MSPRP0118TAFJ		Lamp Holder Guide	AC
18	PSPAH0016TAZZ			AB
19	PSPAN0020TAZZ		Floating Spacer	AB
20	PSPAZ0071TAZZ		Lens Spacer	AA
21	PZETV0292TAZZ		Lamp Terminal Insulator Sheet	AC
22	TLABM1497TAZZ		Model Label (VL-E31S)	AC
22	TLABM1499TAZZ		Model Label (VL-E31H)	AC
22	TLABM1500TAZZ		Model Label (VL-E31X)	AC
22	TLABM1501TAZZ		Model Label (VL-E17E)	AC
23	DUNTK4882KE00		VCR PWB	
24	DUNTK4883KE00		Microphone PWB	
25	DUNTK4884KE00		Camera Main PWB	
26	KLMPV0011TAZZ		Lamp Unit	AZ
27	PGIDM0018TAZZ		Light Guide Plate	AK
28	PMIR-0012TAZZ		Reverberation Sheet	AD
29	PSHEP0001TAZZ		Diffusion Sheet	AE
30	PSHEP0003TAZZ		Prizom Sheet	AL
31	PSLDM9045TAZZ		Shild Sheet	AF
32	QJAKZ0007TAZZ		A/V JACK Unit	AU
33	QPWBH4851GEZZ		LCD Panel FPC	
34	QSW-Z0097TAZZ		VCR Control Switch Unit	AR
35	QTANZ0054TAZZ		Battery Catcher	AY
36	RINV-0004TAZZ		Inverter Unit	AZ
37	RMICC0053TAZZ		Microphone Unit	AS
38	RRMCK0006TAZZ		Remote Control Receptor Unit	AU
39	VSP0028P-31WN		Speaker	AH
40	RLCDV0009TAZZ		LCD Modul	BZ
41	QCNW-1316TAZZ		VCR PWB Earth	AC
a	LX-BZ0175TAFF		Screw (M1.7-3.5)	AA

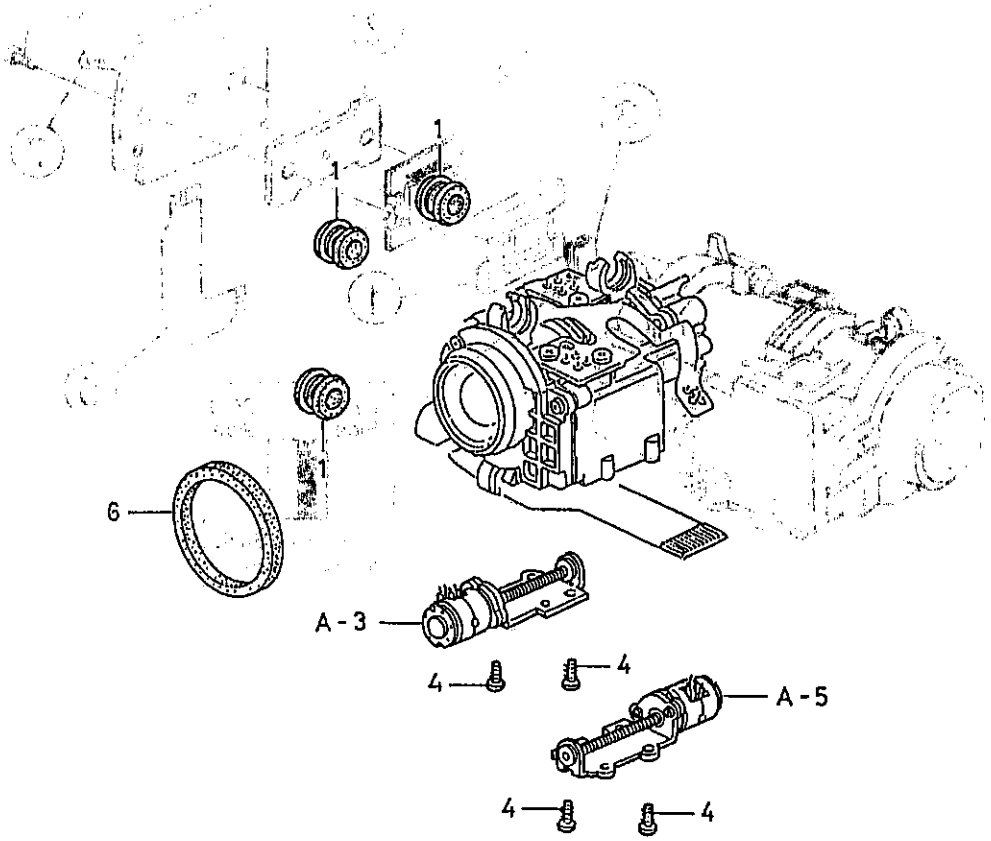
★ MARK: SPARE PARTS DELIVERY SECTION

Ref. No.	Part No.	★	Description	Code
b	LX-BZ0176TAFN		Screw (M2-3)	AA
c	LX-BZ0182TAFD		Screw (M1.7)	AC
d	LX-BZ0183TAFD		Screw (M1.7-3.5)	AC
e	LX-HZ0018TAFF		Screw (M2-6)	AA
f	LX-HZ3025CEZZ		Screw (M1.7-4)	AA
g	LX-HZ3037GEFD		Screw (M2-6)	AA
h	XBPSD26P06J00		Screw (M2.6-6)	AA
i	XBPSD26P10J00		Screw (M2.6-10)	AA
j	XJPSD20P03000		Screw (M2-3)	AA
k	XJPSF20P04000		Screw (M2-4)	AA
l	XJPSC20P04000		Screw (M2-4)	AA
m	XJPSD20P06000		Screw (M2-6)	AA

LENS UNIT PARTS LIST

★ MARK: SPARE PARTS DELIVERY SECTION

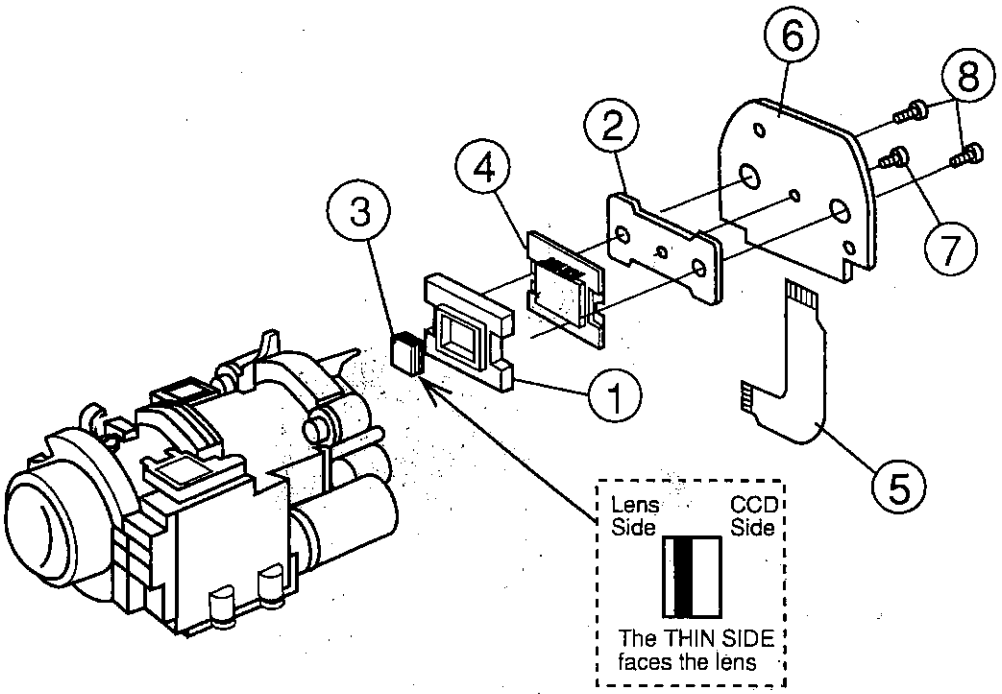
Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
	CLNSA0118TA03		Lens Unit	BS	4	99JBTP173525		Screw (B)	AA
1	99JXSH515815		Anti-Vibration Rubber	AC	A-5	99JBFA516110		Z Motor Ass'y	AX
A-3	99JBFAB516153		F Motor Ass'y	AV	6	99JBFA516117		Front Group Rubber	AD



CAMERA UNIT PARTS LIST

★ MARK: SPARE PARTS DELIVERY SECTION

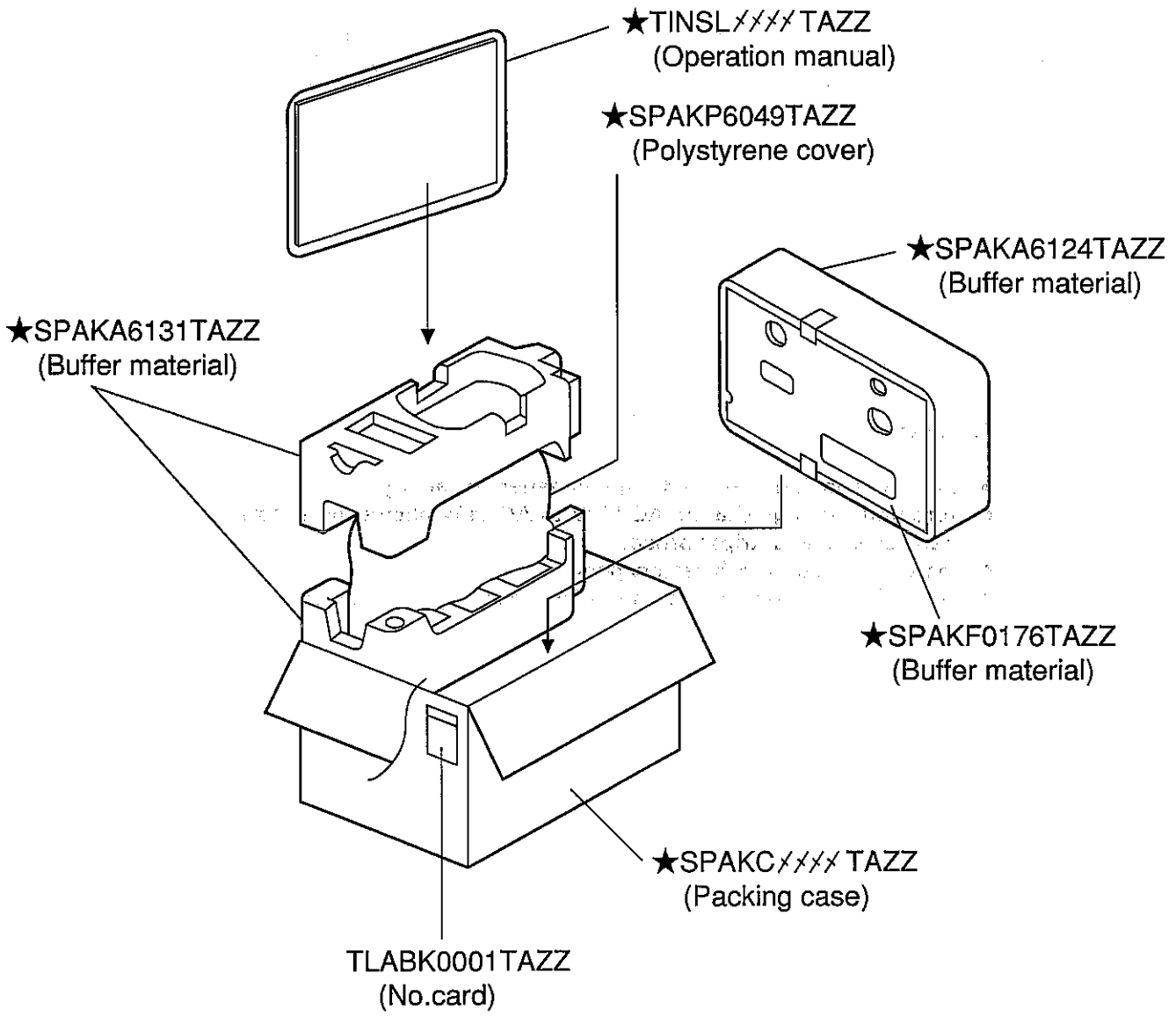
Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
1	PCOVM8015TA00		Dust Protection Rubber	AB	6	DUNTK4885KE00		CCD PWB	—
2	LANGK0280TAFW		Sensor Holder	AB	7	LX-BZ0176TAFF		Screw, Pan Head (M2×2.2)	AA
3	PFILW0060TAZZ		Crystal, Optical L.P.F	AS					
4	VHiLZ-2-4-2-3-5 / -1		CCD Sensor	BH	8	XEBSD20P06000		Screw, Bind Head (2.0×6)	AA
5	QPWBH2457TAZZ		CCD FPC	AH					



15. PACKING OF THE SET

• **Accessory Part Code List by Models**

Model	Operation Manual	Packing Case
VL-E31S	TiNSL0032TAZZ	SPAKC6376TAZZ
VL-E31H	TiNSE0160TAZZ	SPAKC6377TAZZ
VL-E31X	TiNSE0161TAZZ	SPAKC6378TAZZ
VL-E17E	TiNSZ1381TAZZ	SPAKC6379TAZZ



★Not Replacement Item

16. AC ADAPTER

UNIT No. UADP-0176GEZZ (VL-E31S)
UADP-0177GEZZ (VL-E31H)
UADP-0179GEZZ (VL-E31X)
UADP-0178GEZZ (VL-E17E)

Features

- Compact and light-weight design for easier portability.
- Automatic voltage change AC 110V to AC 240V allows the adapter usage even in your trips abroad.
- Charging function with battery pack.
- Rapid charging function to enable the charging in a shorter period of time.

Specifications

Power Requirement:	AC 110-240V, 50/60Hz
DC Output:	DC 6.0V
Power Consumption:	23W
Dimensions (approx.):	70 (W) × 44 (H) × 164 (D) mm
Weight (approx.):	340g(VL-E31S/X/E17E) 420g(VL-E31H)

* Specifications are subject to change without notice.

16-1 EXPLANATION OF OPERATION (UADP-0176GEZZ)

16-1-1. Outline

This product is designed to serve as a power supply for Camcoder and as a quick battery charger for it.
It consists of externally commutated switching regulator using the control IC and secondary side multifunction circuit as shown in Figure 1 "Block diagram".
The primary side control section and secondary side multifunction circuit are composed mainly of surface mounting components and installed in the portable small case for diversified applications.
The required input voltage range is as wide as 110 to 240V (50/60 Hz), so that this product can be used in various places abroad (multiple input type).

The basic operations are executed by the section which is designated to perform constant voltage control and constant current control by comparing power with the reference voltage provided at the secondary side as a switching power supply, the timers and various detecting circuits for battery charging, and the sequence control section. When it is used as an AC adapter, the constant DC voltage is supplied from the DC jack conforming to the EIAJ standard. When it is used as a battery charger, it starts quick charging when the specific battery is mounted while the DC plug is not fitted.

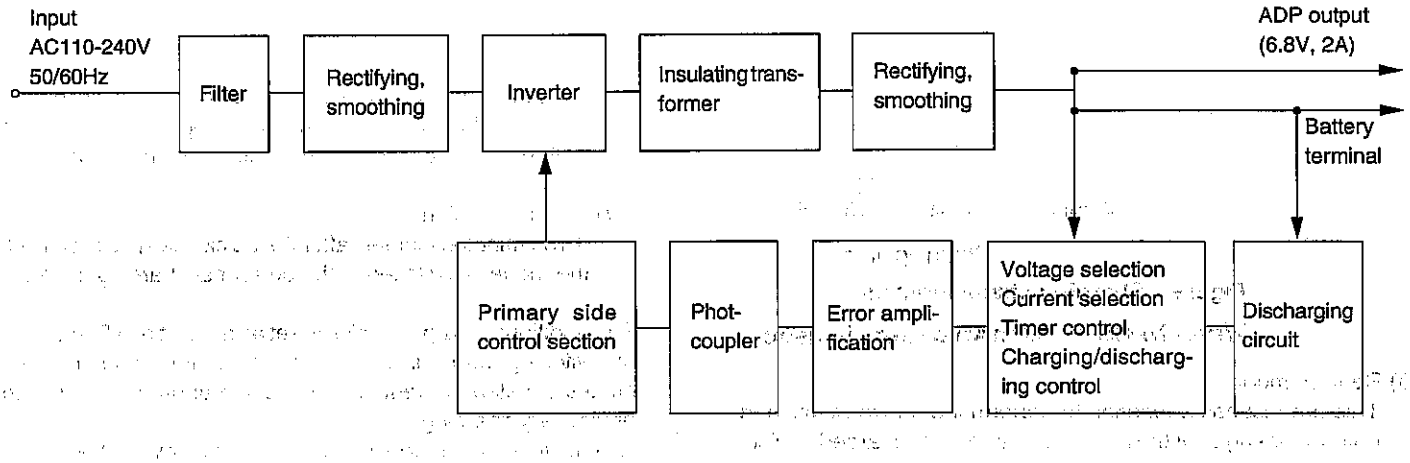


Figure 16-1-1 Block diagram (Camcoder adapter)

16-1-2. Operation

1) Adapter mode

When the DC plug is fitted to the adapter, the stable DC voltage (6.8V, 2.0A) is continuously supplied from the DC jack terminal to actuate the Camcoder.
The power consumption is kept constant in the whole range of control input. It is kept stable irrespective of input fluctuation. It has output characteristics higher than the rated value by 1.5 times or more. It can withstand the transition state where Camcorder starting current or rush current flows.
For the adapter output, the specific overcurrent protection capable of restricting the power in case of external short-circuiting is provided so as to prevent damage and troubles of adapter and to prevent internal abnormal heating of adapter.

2) Ni-Cd charge mode

When the Ni-Cd battery is fitted to the adapter, it serves as a quick charger. The charging has three operation modes which are switched successively.
The first mode is the initial charging. Voltage is restricted to 9.5V. And the time is restricted by the 5- minute timer. Here, 1.2A constant current charging is executed.
The voltage restriction is designated to protect the battery from overvoltage and to prevent excessive charging due to recharging of fully charged battery.
The time restriction is designated to prevent charging error due to initial voltage drop of inactive battery.
The second step is the quick charging mode. As with initial charging, the voltage is restricted to 9.5V, but the time is restricted by 180-minute timer (differing from the initial charging time which is actuated from the beginning of charging). Here, 1.2A quick charging is executed.
During quick charging the battery voltage drop (-ΔV phenomenon) which occurs at the final stage of charging is detected to determine the completion of quick charging. Then, the quick charging is stopped, and the process proceeds to the next step.
When 1.2A current is used for charging of a 1,000 mAh battery, it takes about 60 minutes to charge. For charging a 2,400 mAh battery it takes about 140 minutes to charge. In this case the time restriction by the timer is set to 180 minutes so as to prevent excessive charging caused by -ΔV detection failure. -ΔV detection is set to 80 to 120 mV.
The 3rd step is the trickle charge mode which is designated to hold the full charge state even after completion of quick charging.
Generally, the trickle charge is of about 1/30 to 1/40C, although this parameter varies depending on battery characteristics. This product employs the charging system which is restricted by the constant voltage control output and fixed resistance.
Figure 2 shows the charging characteristics.

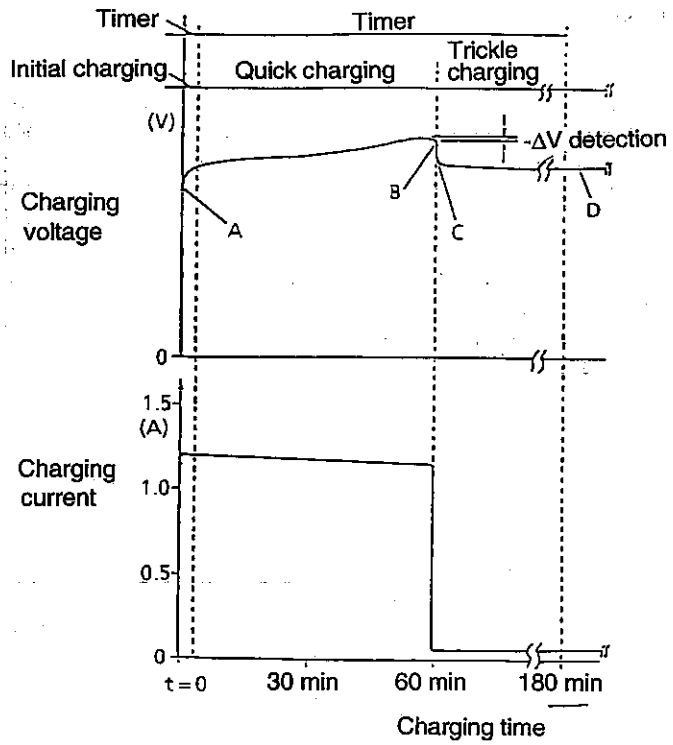


Figure 2 Charging characteristics

When Ni-Cd 1,000 mAh battery is used

3) Refresh mode
This product has a function to perform the above-mentioned quick charging after the provided battery is discharged forcibly and sufficiently by user's switch operation so as to prevent charging efficiency drop due to memory effect.
This mode is valid also for the Ni-Cd battery and nickel-hydrogen battery explained later.
When the refresh switch is pressed after the battery is mounted, 0.1 to 0.5A discharge current flows and consumed by the resistor provided in the adaptr.
So as to reduce the deterioration of bettery, discharging is quit when the discharging bettery voltage lowers down to about 5.0V, and the mode is automatically switched to the charge mode.

4) Nickel-hydrogen battery charging mode
When the nickel-hydrogen battery is fitted to the adapter while the DC plug is not fitted, the T terminal is detected, and the nickel-hydrogen battery quick charging is started.
The nickel-hydrogen battery is charged in 5 steps which are switched successively.
The fist step to be executed first after the nickel-hydrogen battery is mounted is the preliminary charging.
The preliminary charging uses constant current of about 0.4A.
When 2 minutes elapses, the mode is changed to the next mode.
This step is for activation of battery. Therefore the completion of charging is not detected. Only the battery protection function such as overvoltage detection function and abnormal temperature detection function are provided.
The next step is the initial charging as with the Ni-Cd battery.
The differences from the Ni-Cd battery are that the overvoltage detection limit is 8.5V and the abnormal temperature detecting function is provided.
The 3rd step is the quick charging mode which corresponds to the quick charging of Ni-Cd battery.

The phenomenon detection function in this mode and the mode change after detection are as shown below.

I) -ΔV detection:
-ΔV (50 to 90 mV) of battery voltage is detected, and the mode is switched to the trickle charge.

II) Overvoltage detection:
When the battery voltage exceeds 8.5V, an abnormal state is detected, and the mode is switched to the trickle charge.

III) ΔT detection:
When the battery temperature rise gradient exceeds 1°C/min during charging, it is judged that the charging will be completed soon, and the mode is switched to the additional charge.

IV) Abnormal temperature detection:
When the battery temperature reaches 57~62°C during charging, the charging operation is stopped to protect the battery, and the mode is switched to the trickle charge.

V) Timer operation:
If 180 minutes elapses after the quick charging is started, the mode is switched to the additional charging mode.

The additional charging which is set as a result of ΔT detection or switching from quick charging due to timer operation executes constant current charging using about 0.4 A as with preliminary charging.
At this time the mode changes by -ΔV, overvoltage and abnormal temperature detecting functions are the same as those for quick charging. When one hour elapses after the additional charging is started, the mode is switched to the trickle charge by the built-in timer.
At the 5th step, namely in the trickle charge mode, the trickle charge current is fed with the aid of constant voltage and fixed resistance as in case of the Ni-Cd battery.

16-1-3. Explanation of circuit

Below is given an explanation of adapter circuit according to the circuit diagram shown in Figure 3.

1) Input section
The input section consists of noise filter and capacitor input rectifying and smoothing circuit. The noise filter is used to reduce the common mode noise. It is composed of L1, C1, C26, C27 and C28.
R50 and R51 are a discharge resistor which is used to eliminate voltage in the input plug when the power supply is turned off.
The rush current which flows in when the power supply is turned on is significantly restricte d by R2, DCR of L1 and operating resistance of D1.

2) Switching section
The switching circuit actuates the transistor Q1 as a switch according to the signal sent from the primary side control section, using the DC voltage smoothed by C2. It forms a high frequency inverter together with transformer T1.
R2, C3 is a snubber circuit designated to absorb the surge voltage generated when switching is executed.

3) Primary side control section
The signal sent from the secondary side control circuit through the Photcoupler is pulse-width-converted to drive the switching section.
The control IC (IC4) is used for Q1 (MOS FET) drive. This IC has a function to detect overvoltage at D8 and stop oscillation, thereby serving as an overvoltage protector.

4) Output circuit
For the secondary side output the general ON-OFF system configuration is adopted. The output ripple and common mode noise are reduced by the L2 and L4 chokes.
Q2 is a charging switching transistor. In case of quick charging, preliminary charging and additional charging it is turned on through Q3 by the output of the pin 6 of IC3.
D11 is used to prevent discharge trouble to the control circuit when the input is set to off while the battery is mounted.

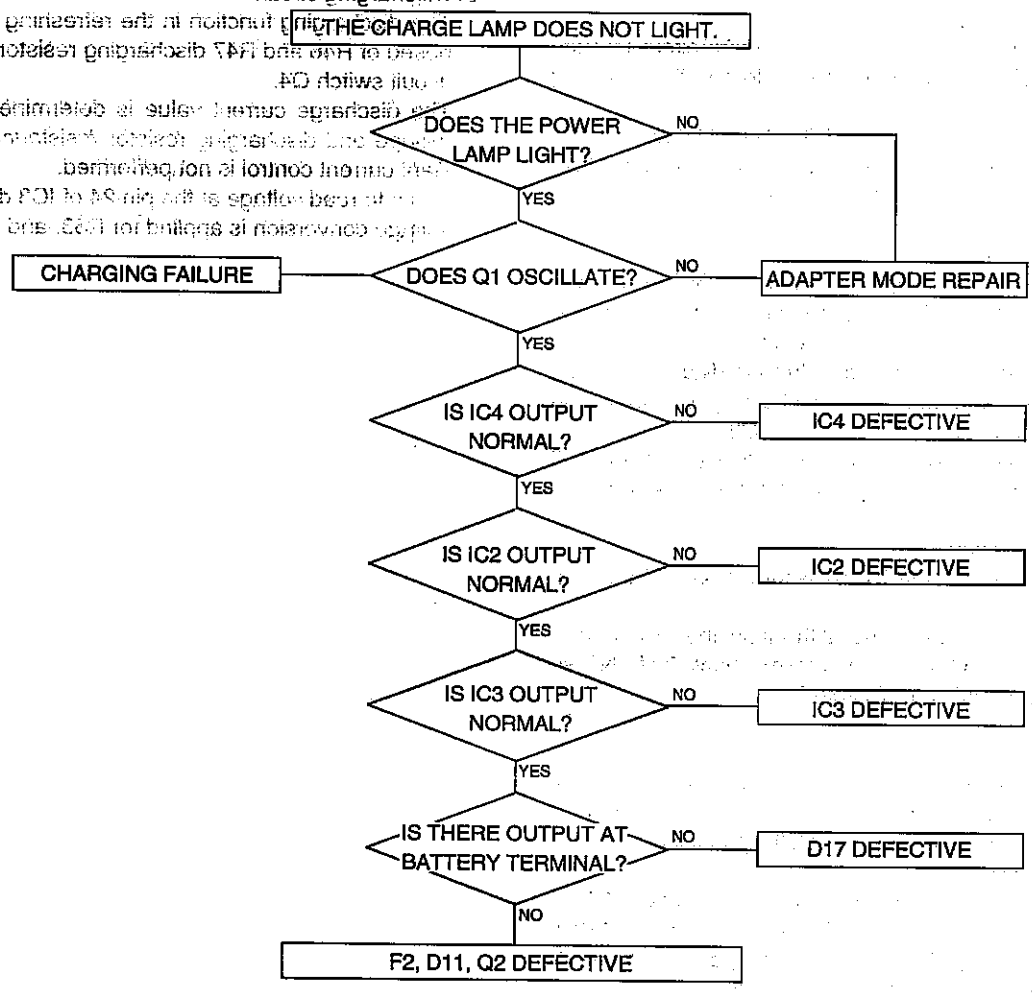
5) Battery detection circuit
When the battery is mounted, SW2 is turned on by the switch knob.
If the DC plug is not fitted to CN2 at this time, the GND level is input to the pin 10 of IC3 by the internal mechanism of CN2, so that the battery mounting is detected.

6) Secondary side control circuit
The secondary side control is designated to amplify the error of detected output voltage and current, to transmit the signal to the primary side control circuit through the photcoupler, and to control the switching section.
The constant voltage setting and detection are executed by IC2-II. The adapter mode (6.8V) or charging mode (10.5V) is selected by changing the reference voltage as a result of voltage selection oppression of pin 5 of IC3.
The constant current and overcurrent protection setting and detection are executed by IC2-I. The constant current setting (1.2A and 0.4A) is selected according to the output of the pin 7 of IC3.
The overcurrent protection in the adapter mode is ensured by the primary side control section.
IC1 has the constant voltage power supply function to ensure IC3 drive power supply and IC2 reference voltage and the resetting function to prevent errors.
The constant voltage output of IC1 is used as a reference voltage in case of output voltage and current error amplification.

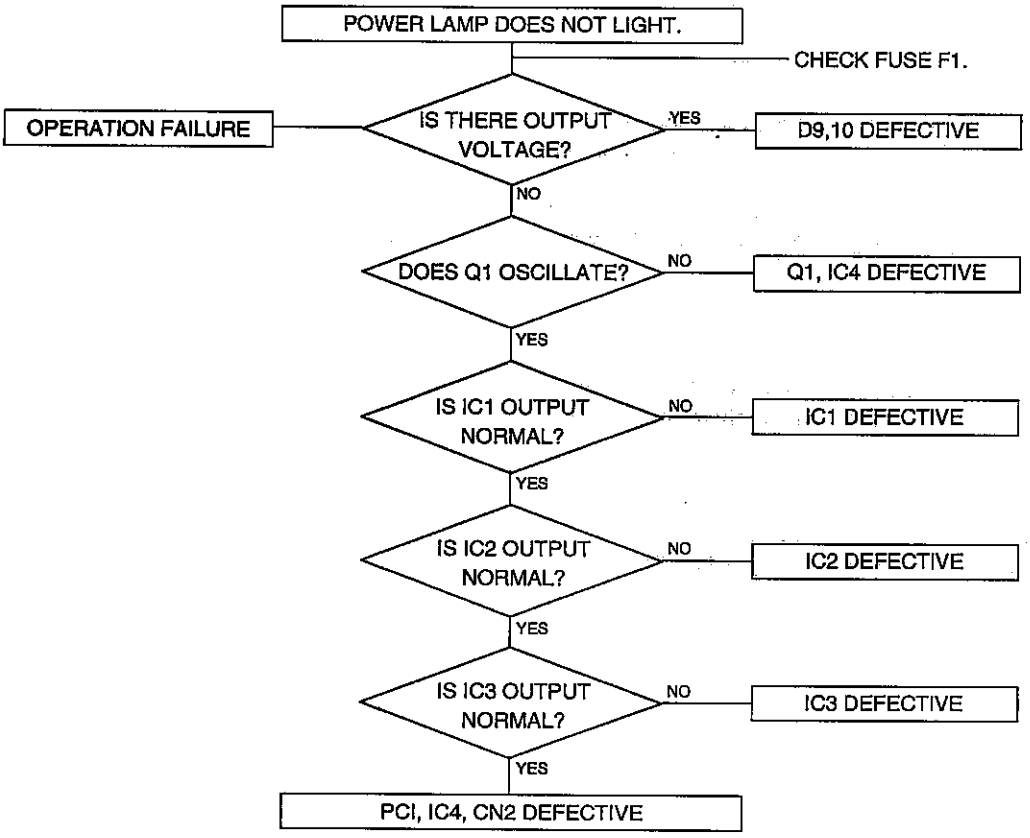
7) Indication
In the adapter mode only D16 (red LED) lights.
In the charge mode D16 and D17 (Orange LED) light during quick charging, but after completion of charging (in trickle mode) only D17 goes out.
In the refresh mode D17 blinks at the sank time as D16 is lit. At the same time as the discharge is completed, the quick charging is started, and D17 begins to light.
D17 ON/OFF control is executed by the pin 4 of IC3.

8) Discharging circuit
The discharging function in the refreshing operation is composed of R46 and R47 discharging resistors and discharging circuit switch Q4.
The discharge current value is determinesd by the battery voltage and discharging resistor resistance value. The constant current control is not performed.
So as to read voltage at the pin 24 of IC3 during discharging, voltage conversion is applind for R53, and R44.

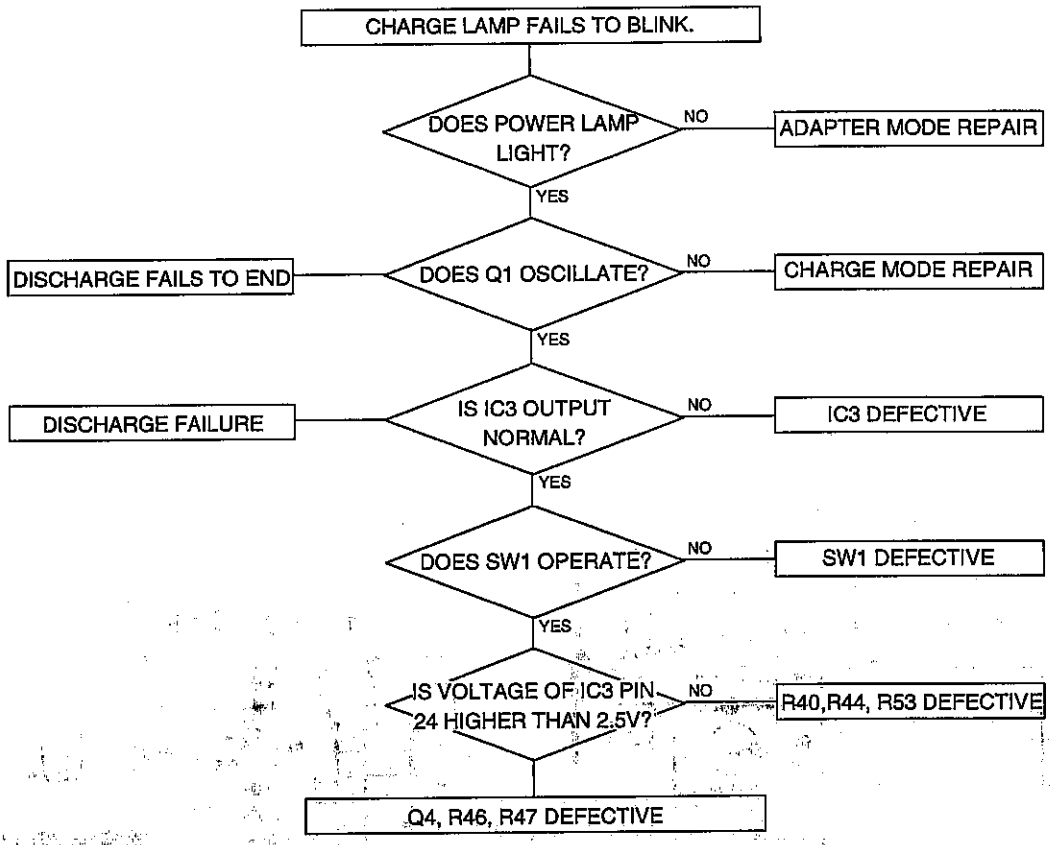
CHARGE MODE



ADAPTER MODE

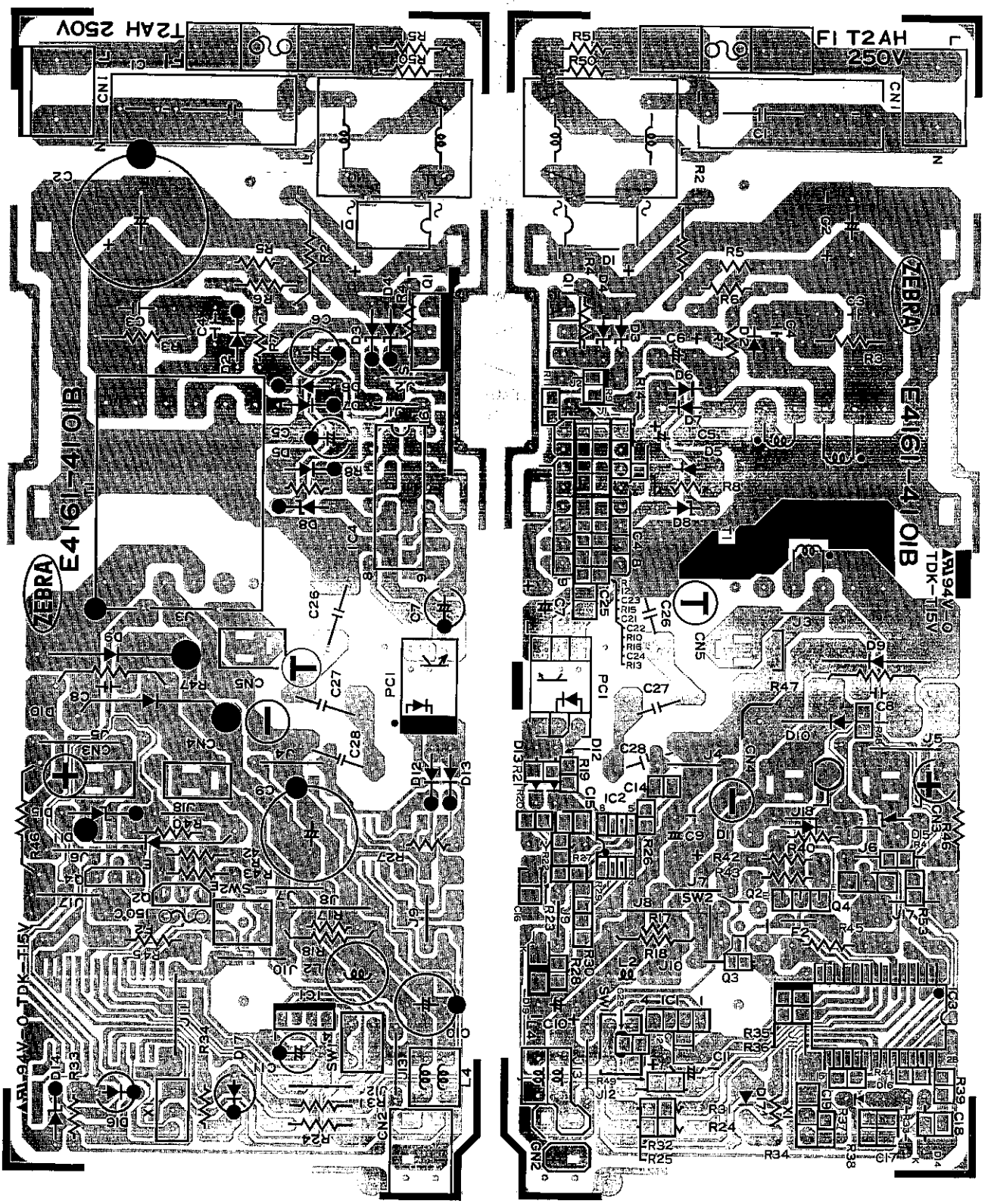


REFRESH MODE

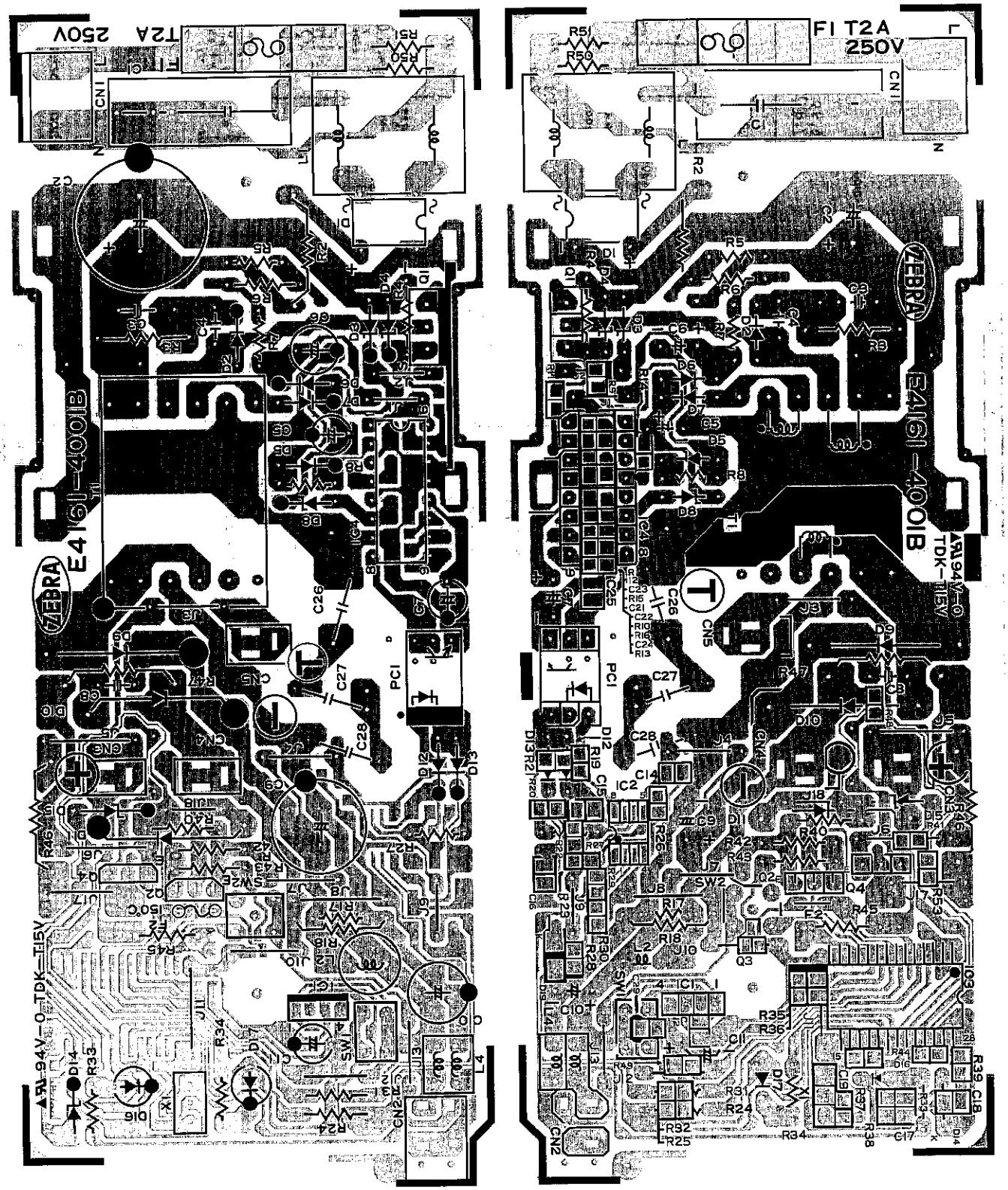


16-2. AC ADAPTER P.W.B

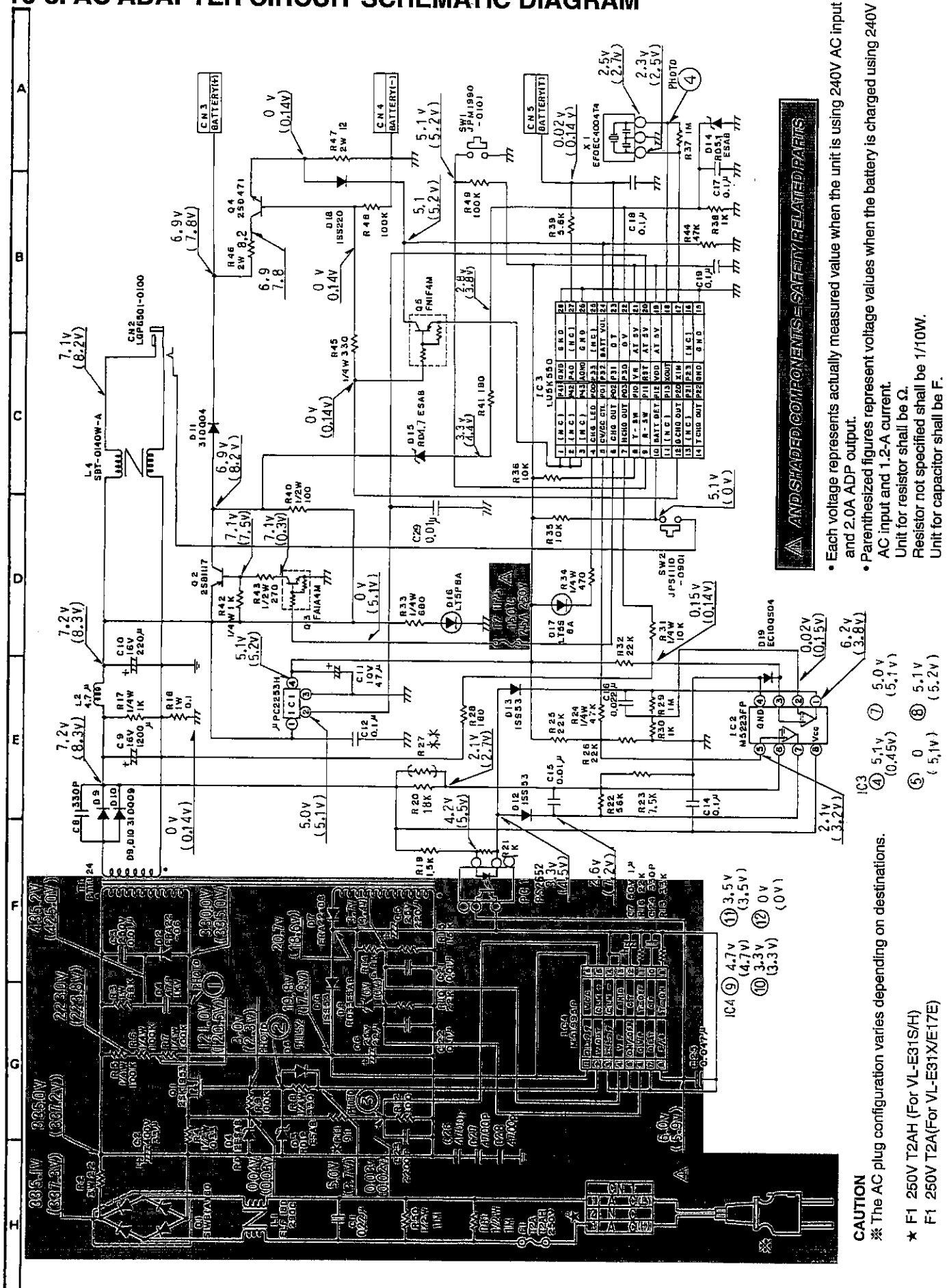
- UADP-0176GEZZ
- UADP-0177GEZZ

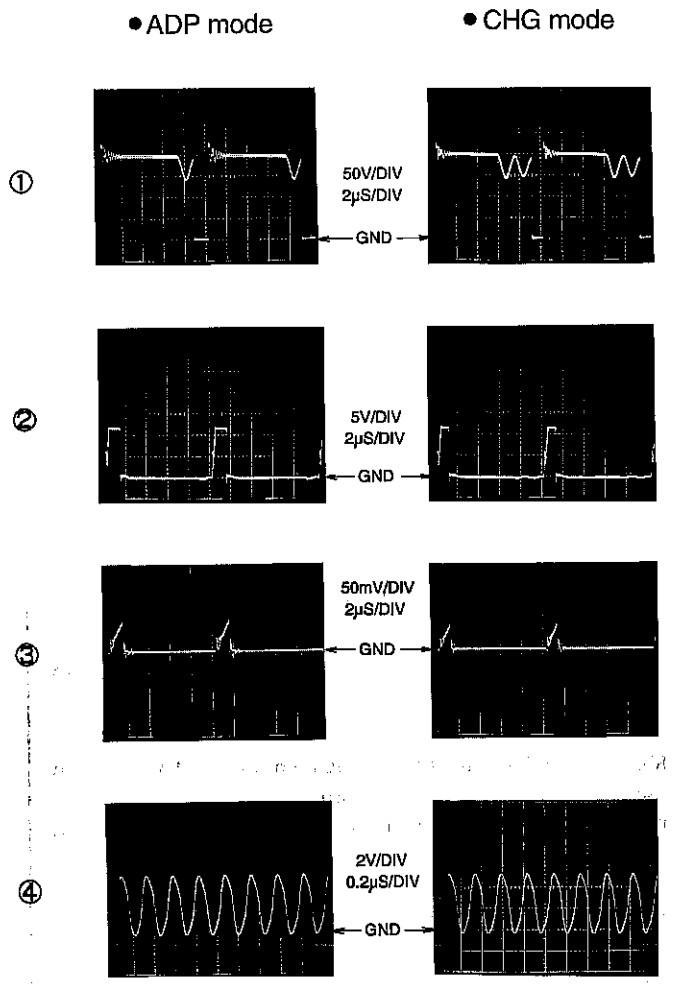


- UADP-0178GEZZ
- UADP-0179GEZZ



16-3. AC ADAPTER CIRCUIT SCHEMATIC DIAGRAM


⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS
• Each voltage represents actually measured value when the unit is using 240V AC input and 2.0A ADP output.
• Parenthesized figures represent voltage values when the battery is charged using 240V AC input and 1.2-A current.
Unit for resistor shall be Ω.
Resistor not specified shall be 1/10W.
Unit for capacitor shall be F.
CAUTION
※ The AC plug configuration varies depending on destinations.
★ F1 250V T2AH (For VL-E31S/H)
F1 250V T2A(For VL-E31X/E17E)



16-4. REPLACEMENT PARTS LIST/ EXPLODED VIEWS

PARTS REPLACEMENT

Many electrical and mechanical parts in camcorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER **2. REF. NO.**
3. PART NO. **4. DESCRIPTION**
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	Description	Code
INTEGRATED CIRCUITS			
IC1	95KUCB0118AZ	UPC2253H	AH
IC2	95KUCY0011AK	M5223FP-600C	AE
IC3	95KUCY0024AK	LU5K550	AP
⚠ IC4	95KUCC0044AZ	M51995P	AP
TRANSISTORS			
⚠ Q1	95KUAG0048AZ	2SK1142	AM
Q2	95KUAB0055AK	2SB1117-T	AF
Q3	95KUAY0002AK	FA1A4M-T1	AC
Q4	95KUAD0038KZ	2SD471-T	AD
Q5	95KUAY0011AK	FN1F4M-T1	AC
DIODES			
⚠ D1	95KUBB0148DZ	S1WB(A)60	AF
⚠ D2, ⚠ 5, ⚠ 7	95KUBC0169CK	ERA22-06V1	AC
⚠ D3, ⚠ 4	95KUBDAK120C	RD12ESAB2-T4	AB

Ref. No.	Part No.	Description	Code
⚠ D6, 12, 13	95KUBA0004KZ	1SS53-T4	AB
⚠ D8	95KUBDAC330D	RD33ESAB3-T4	AC
D9, 10	95KUBC0095EB	31DQ09-FC	AH
D11	95KUBC0095BB	31DQ04FC	AE
D14	95KUBDAK5R1B	RD5.1ESAB1-T4	AB
D15	95KUBDAK4R7D	RD4.7ESAB3-T4	AB
D16	95KUDC0156ZZ	LT5P8A	AD
D17	95KUDC0155ZZ	LT5S8A	AD
D18	95KUBY0007AK	1SS220-T1B	AC
D19	95KUBY0022CK	EC10QS04-TE12L	AF

COILS AND TRANSFORMER

⚠ L1	95KUKZ0306ZZ	Choke coil	AK
L2	95KUKZ0496ZK	Choke coil	AE
L4	95KUKZ0563ZZ	Choke coil	AH
⚠ T1	95K129035062	Transformer	AW
X1	95KUZZ0133ZZ	Crystal	AE

CAPACITORS

⚠ C1	95KUGFZ224FY	, Film	AF
⚠ C2	95KUGAQ330RT	33µF, 400V, ±20%, Electrolytic	AK
⚠ C3	95KUGZ0865ZZ	0.01µF, 250V, ±10%, Film	AD
⚠ C4	95KUGCU470BG	47pF, 1KV, ±10%, Ceramic	AB
⚠ C5	95KUGAD221FD	220µF, 25V, ±20%, Electrolytic	AC
⚠ C6	95KUGAD220FD	22µF, 25V, ±20%, Electrolytic	AB
⚠ C7	95KUGAF010FD	1µF, 50V, ±20%, Electrolytic	AB
C8	95KUGCS331AA	300pF, 500V, ±100%~−0%, Ceramic	AC
C9	95KUGAC122NS	1200µF, 16V, ±20%, Electrolytic	AE
C10	95KUGAC221FD	220µF, 16V, ±20%, Electrolytic	AC
C11	95KUGAB470FD	47µF, 10V, ±20%, Electrolytic	AB
C12, 14, 17, 18, 19, ⚠ 22	95KUGXAFF104	0.1µF, 50V, ±80%~−20%, Ceramic	AB
C15, 21, 29	95KUGXAEF103	0.01µF, 50V, ±10%, Ceramic	AB
C16	95KUGXAEF223	0.022µF, 50V, ±10%, Ceramic	AB
⚠ C23	95KUGXAEF222	2200pF, 50V, ±10%, Ceramic	AA
⚠ C24	95KUGXAEF331	330pF, 50V, ±10%, Ceramic	AA
⚠ C25	95KUGXAFF473	0.047µF, 50V, +80%~−20%, Ceramic	AB
⚠ C26, 28	95KUGCQ472AB	4700pF, 250V, ±20%, Ceramic	AD
C27	95KUGCZ472CH	4700pF,	AD

RESISTORS

⚠ R2	95KUEFF2R2AP	2.2 ohm, 3W, ±5%, Metal	AE
⚠ R3	95KUEFD683BH	68K ohm, 1W, ±5%, Metal	AB
⚠ R4	95KUEZ0489ZZ	0.33 ohm, 1/2W, ±10%, Metal	AC
⚠ R5, ⚠ 6, ⚠ 7	95KUEEB104BE	100K ohm, 1/4W, ±5%, Carbon	AA
⚠ R8, 45	95KUEEB331BE	330 ohm, 1/4W, ±5%, Carbon	AA
⚠ R9, 48, 49	95KUEXCAC104	100K ohm, 1/10W, ±5%, Carbon	AA
⚠ R10, ⚠ 16, 25, 26, 32	95KUEXCAC223	22K ohm, 1/10W, ±5%, Carbon	AA
⚠ R11	95KUEXCAC910	91 ohm, 1/10W, ±5%, Carbon	AA
⚠ R12	95KUEXCAC101	100 ohm, 1/10W, ±5%, Carbon	AA
⚠ R13	95KUEXCAC333	33K ohm, 1/10W, ±5%, Carbon	AA
⚠ R14	95KUEXCAC682	6.8K ohm, 1/10W, ±5%, Carbon	AA
⚠ R15, 19	95KUEXCAC152	1.5K ohm, 1/10W, ±5%, Carbon	AA
R17, 42	95KUEEB102BE	1K ohm, 1/4W, ±5%, Carbon	AA
R18	95KUEFDR10BE	0.1 ohm, 1W, ±5%, Metal	AD
R20	95KUEXCAC183	18K ohm, 1/10W, ±5%, Carbon	AA
R21, 30, 38	95KUEXCAC102	1K ohm, 1/10W, ±5%, Carbon	AA
R22	95KUEXCAC563	56K ohm, 1/10W, ±5%, Carbon	AA
R23	95KUEXCAC752	7.5K ohm, 1/10W, ±5%, Carbon	AA
R24	95KUEEB473BE	47K ohm, 1/4W, ±5%, Carbon	AA

Ref. No.	Part No.	Description	Code
R28, 41	95KUEXCAC181	180 ohm, 1/10W, ±5%, Carbon	AA
R29, 37	95KUEXCAC105	1M ohm, 1/10W, ±5%, Carbon	AA
R31	95KUEEB103BE	10K ohm, 1/4W, ±5%, Carbon	AA
R33	95KUEEB681BE	680 ohm, 1/4W, ±5%, Carbon	AA
R34	95KUEEB471BE	470 ohm, 1/4W, ±5%, Carbon	AA
R35, 36	95KUEXCAC103	10K ohm, 1/10W, ±5%, Carbon	AA
R39	95KUEXCAC562	5.6K ohm, 1/10W, ±5%, Carbon	AA
R40	95KUEEC101BE	100 ohm, 1/2W, ±5%, Carbon	AA
R43	95KUEEC271BE	270 ohm, 1/2W, ±5%, Carbon	AA
R44	95KUEXCAC473	47K ohm, 1/10W, ±5%, Carbon	AA
R46	95KUEFE8R2AV	8.2 ohm, 2W, ±5%, Metal	AD
R47	95KUEFE120AV	12 ohm, 2W, ±5%, Metal	AB
⚠ R50, 51	95KUEEC105BE	1M ohm, 1/2W, ±5%, Carbon	AA

MISCELLANEOUS

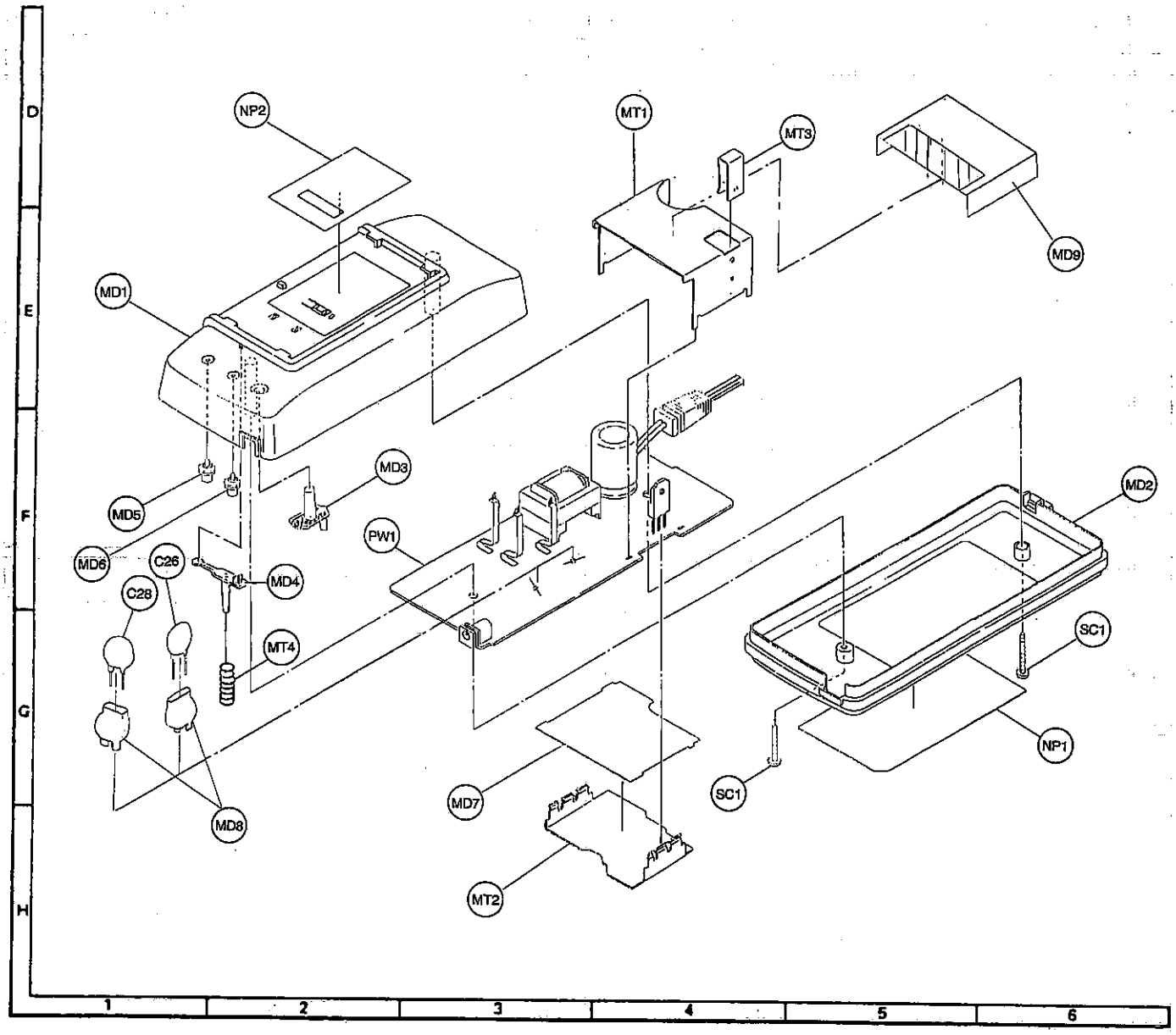
⚠ F1★	95KPJCZZ0043	Fuse, T2AH, 250V (VL-E31S/H)	AH
⚠ F1★	95KPJCAY2001	Fuse, T2A, 250V (VL-E31X, VL-E17E)	AD
⚠ ※	95KEHS0528ZZ	AC Cord (VL-E31S)	AN
⚠ ※	95KEHS0631ZZ	AC Cord (VL-E31H)	BB
⚠ ※	95KEHS0664ZZ	AC Cord (VL-E31X)	AU
⚠ ※	95KEHS0531ZZ	AC Cord (VL-E17E)	AN
⚠ F2	95KPJT0085ZZ	Fuse, U25, 150°C, 2.5A, 250V	AE
SW1	95KPFZ0219ZZ	Switch	AC
SW2	95KPFZ0250ZZ	Switch	AF
PC1	95KUDC0093BZ	Photo Coupler	AF
CN1	95KPKZ0194ZZ	Connector, Post	AC
CN2	95KPGZ0030ZZ	Jack	AE
CN3, 4, 5	95KLRZ5954ZK	Terminal	AE

※ **Remark:**
When changing main cord the whole cord with connection plug must be changed. (VL-E31S only)
The cable is kept as a spare part by:

- SWEEDEN
  SHARP ELECTRONICS (SVENSKA) AB
- DENMARK
  RUDOLPH SCHMIDT A/S
- FINLAND
  ASA KULUTUS ELEKTRONIIKA OY
- NORWAY
  TRANSEL A/S

CABINET PARTS

MT1	95KLRZ5893ZP	Sink, Heat	AE
MT2	95KLRZ5892ZZ	Cover	AD
MT3	95KLRS5015ZZ	Supporter	AC
MD1	95KMRZ5291ZZ	Cabinet, Upper	AQ
MD2	95KMRZ5292ZZ	Cabinet, Lower	AL
MD3	95KMRZ5224ZZ	Switch, Refresh	AD
MD4	95KMRZ5294ZZ	Lever	AE
MD5, 6	95KMRZ5288ZZ	Lens, LED	AD
MD7	95KGZZ5144ZZ	Sheet, Insulator	AC
MD8	95KPZZ0620ZZ	Cover	AC
MD9	95KGZZ5150ZZ	Sheet, Insulator	AC
NP1	95KSBB1680ZZ	Label, Model (VL-E31S)	AG
NP1	95KSBB1681ZZ	Label, Model (VL-E31H)	AG
NP1	95KSBB1683ZZ	Label, Model (VL-E31X)	AG
NP1	95KSBB1682ZZ	Label, Model (VL-E17E)	AE
NP2	95KSBB1640ZZ	Label	AE
SC1	95KRAZF002ZE	Screw	AA


NP2
MT1
MT3
MD9
MD1
MD3
MD5
MD6
C26
C28
MD4
MT4
PW1
MD2
SC1
NP1
MD7
MD8
MT2
D
E
F
G
H
1
2
3
4
5
6

VL-E31S/H/X
VL-E17E

SHARP

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